

Amateur Radio

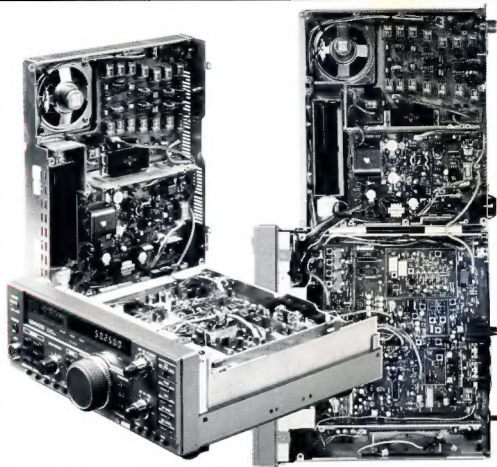


JOURNAL OF THE WIRELESS INSTITUTE OF
AUSTRALIA

VOL 56, No 2 AUGUST 1988

**TWO METRE PROPAGATION AND
TEMPERATURE INVERSION
REPORT TO EXECUTIVE ON SPECIAL CALL
SIGNS
THREE AUSSIES AT DAYTON HAMVENTION
20 AMP POWER SUPPLY
TREASURER'S REPORT
SATELLITE TELEVISION**

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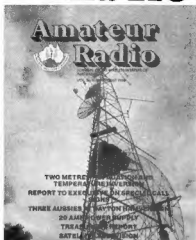
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Amateur Radio



—Photograph courtesy Brian Green

A group of antennas to make any amateur envious, particularly after reading the article on two metre propagation by John VK3DNK, (see page 8). The proud owner of this antenna farm is Wally VK6WG, a 1296 MHz Record Holder (page 33, May AR). Wally also gains many mentions from Eric VK6LR in the VHF-UHF columns.

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DEADLINE

All copy for inclusion in the October 1988 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9 am, August 22, 1988.

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Amateur Radio



Editor's Comment

THE BUCK STOPS HERE!

When General Eisenhower was President of the United States, he was said to have on his desk a plaque bearing the above inscription. His subordinates might have the good old Public Service privilege of passing the hard decisions further up the line, but when they reached the President he was "stuck with it".

I have been reminded of this in a number of ways in the last few days. By the time you read this, Mr and Mrs VK3ABP will have returned from a two week trip to Sunny Queensland (to visit Expo of course!), travelling by road to Brisbane and back. Naturally such a trip demands a usable two-metre FM transceiver. The VK3ABP home-brew mobile began to display the worst kind of fault about three months ago, not only intermittent but also temperature sensitive, and steadily deteriorated until it refused to transmit at all on any frequency! Obviously it had to be fixed. By whom? It would take anyone else a week to find their way around the unit. The buck stops here!

While I was investigating whether it was merely some sort of cumulative alignment drift, or something worse, there was another little prob-

lem which couldn't be postponed much longer. This editorial had to be written! The August deadline is tomorrow. Even if someone else could do it, they would be entitled to a few days warning. I've left it too late! The buck stops here! I can't see it; no idea what this kind of buck actually looks like; but nevertheless it's right here! I am happy to say though, that it seems much less ominous now, half way down the page, than it did an hour ago!

We receive many letters, and publish most of them, on a number of persistent themes. Essentially, they all boil down to one, that something about the present state of amateur radio is not as good as it should be, and something ought to be done about it! By whom? Usually by almost anyone else than the writer! Certainly, the WIA exists to do things for its members which they cannot, as individuals, do so well. But there are cases where the individual can do a great deal. Before you "pass the buck", think again whether your problem is one in which, at your QTH, "the buck stops here!"

Bill Rice AX3ABP
Editor

RAG CHEWING

The most popular operating activity is chatting, called rag chewing by amateurs. The ARRL issues a special award, Rag Chewers' Club (RCC), designed to encourage friendly contacts and discourage the "bories" type of QSO with nothing more than an exchange of call signs, signal reports and so on. Your very first contact as a licensed radio amateur may very well earn this award! The only requirement is to spend a solid half-hour or longer of pleasant "visiting" with another amateur, discussing subjects of mutual interest.

Rag chewing is particularly interesting when one contacts a foreign (DX) amateur. Many amateurs put a world map on the wall, locate the city of the foreign amateur's country or island, and insert pins in the map to show the locations of these contacts. These chats develop more appreciation and knowledge of languages, customs of other countries, postage stamps, time zones, and many other things. It is surprising how many foreign amateurs know enough English to carry on a good chat with you! And, if you use CW (Morse code), it is possible to carry on a chat with foreign amateurs with no knowledge of English!

First there are the "Q" signals, three letter groups beginning with Q, that mean the same thing in every language. For example, "QTH?" means what is your address? To answer, one sends "QTH" followed by the address.

Then there are a number of books one can purchase that contain a few standard sentences in many languages, that can be sent in code. One such book, K3CHP's *DX QSL Guide*, contains 12 standard sentences in 54 different languages, and is very useful for filling out QSL cards that are exchanged to confirm the DX contact. Sentences like "I have been a radio amateur for . . . years", "My age is . . . years" can be used in short chats.

Another such book is titled *CW into Foreign Languages* by VE6EIM. Pronunciation of the foreign words is no problem because there are no spoken words — your Morse key is your voice!

After using these books for awhile, many amateurs pick up enough of some languages to carry on short chats without difficulty!

Rag chewing with amateurs across the United States is also fun. Of course, there is no language problem! One meets amateurs of all ages, from youngsters to very senior citizens, and often has the opportunity to meet some of these friends in future trips, for what is called an "eyeball QSO".

Rag chewing is frequently followed by exchanges of letters, photographs, maps, and other items. It is a fun way to make friends around the world, and to promote friendship and understanding between peoples of all countries.

—Written by Bill Levin NJ7G and contributed by Bob Ciffon VK3JUL

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TREASURER'S REPORT

Following the acceptance of the Acting Treasurer's 1987 Financial Report at the 1988 Federal Convention, pertinent figures from the accounts which were audited by accountants Touche Ross and Company, are now published.

CATEGORY	BUDGET	ACTUAL
Amateur Radio Income	\$ 37 000	\$ 36 483
Amateur Radio Expenditure	\$167 000	\$166 050
Amateur Radio Cost to Members	\$130 000	129 567
Federal Office Income	\$248 996	\$241 786
Federal Office Expenditure	\$253 000	\$242 732
Loss	-\$ 4 004	-\$ 964

COMMENTS ON SOME OF THE MORE INTERESTING ASPECTS OF THE 1987 PROFIT AND LOSS RESULTS

Amateur Radio Magazine

The result of only 0.3 percent variance from the budget was excellent and was due mainly to the efforts of:

1. The then treasurer, Ross Burstal VK3CRB, in dramatically bringing to Executive's attention his concern about the financial situation at the time, particularly the rapidly escalating costs of paper and printing (rising at rates approximately 500 percent greater than the rise in CPI);
2. The decisions eventually made by Executive to attempt to counteract these costs; and
3. Ken and Bett McLachlan, the proprietors of Betken Productions who, by searching for cost effective alternatives, and then by a mixture of cajoling and hard-nosed negotiation, suc-

ceeded in effectively reducing several of the costs of producing AR.

The end result of this was that an average number of 8086 members for the year each received a monthly issue of AR posted to their address for \$1.45 per issue. This was surely unequalled value for money!

Advertising

Substantially due to the lack of support from several Divisions, and partially due to the economic reasons of which we are all aware, income from advertising was 3 588 below budget. Fortunately, this was offset by an increase in Direct (Overseas) Subscriptions, and unbudgeted income from Inserts.

Drafting

The large increase in drafting costs was due to a considerable increase in the number of technical drawings published in 1987, particularly because of the Building Blocks series of articles. At the moment, AR only has one draftsman!

General Income

Fortunately the \$3 556 shortfall in Subscriptions income, mainly due to a lack of a successful recruitment policy and/or campaign to maintain/increase membership, and the \$5 410 lack of income because of the non-production of a Call Book, were substantially offset by the \$4 759 higher than expected interest Received and income from the Technical Equipment Advisory Committee.

General Expenses

Audit Fee Auditors — Other Services

The Auditor's fees seem excessive for the size of our organisation, but they have been doing all the Journal, General Ledger, and Financial Statement accounting for the Federal Body, as well as the auditing. The only accounting work performed in the Federal Office (apart from the highly efficient computerised membership records), and the Debtors Ledger invoices and statements, was a rough cashbook. It is ex-

pected that these fees will reduce by \$1 500 to \$2 000 in 1988 because of the new accounting package being installed in the Federal Office.

Awards and Special Projects

Most of this amount was used to manufacture a sufficient supply of the "Taylor" medals to last approximately 10 years. About \$3 000 of this expenditure should have been removed from General Expenses to Current Assets on the Balance Sheet, with a corresponding improvement in the year's performance result.

Bicentenary Provision R5GB 75th Anniversary Travel Provision

Because of concern about the state of the finances of the Federal Body, no funds were applied to these budgeted items.

Long Service Leave Provision

It seems that this amount was under-budgeted because of a lack of understanding of the method of calculation of the provision.

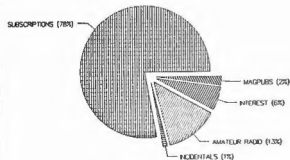
SUMMARY

Despite some very real concerns during the year, it could be argued the end result for 1987 was quite acceptable. However, the major source of income to the Institute is from members subscriptions. Therefore, it is rather disturbing to note that, although there was a 4.3 percent growth in the number of licensed amateurs in Australia in the 1987 calendar year, there was a 2.3 percent decrease in the number of members of the WIA in the same period.

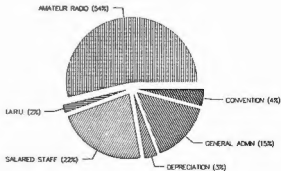
It seems fairly obvious that the Institute must take urgent steps to lift its performance and to become more attractive to amateurs, and that Divisions and Clubs must become more actively involved in substantially increasing our membership.

If members require the detailed audited Financial Statements for 1987, including a copy of the Acting Treasurer's Report to the 1988 Federal Convention, please write to the Federal Office.

1987 INCOME



1987 EXPENDITURE



—Bill Roper VK3ARZ, Acting Federal Treasurer from November 27, 1987 to April 24, 1988

20 AMP POWER SUPPLY

... with overvoltage and overcurrent protection

Moorabbin and District Radio Club
PO Box 88, East Bentleigh, Vic. 3165

A power supply which incorporates fixed overcurrent limiting and short circuit protection.

FOR NEARLY 20 YEARS the Moorabbin and District Radio Club (MDRC) has, from time to time, published articles to help with kits for these supplies.

To date, three "Marks" have been introduced. In every case a redesign has been necessary only to overcome supply problems — usually when a specific component has gone off the market.

The Mark 3, first introduced some three years ago, used a 78HG primary regulator. These are now no longer available and a redesign to overcome this problem has led to the "Mark 4" which is described in this article.

Whilst overvoltage protection has always been a feature of these supplies, it was decided that the new "Mark" would also incorporate fixed overcurrent limiting and thus short circuit protection. Finally, it was decided to include protection against mains borne "spikes" which can lead to the unwanted operation of the overvoltage trip facility.

The voltage output is variable between eight and 15 volts.

Figure 1 gives the circuit diagram whilst Figure 2 gives the layout of the components (enclosed within the dotted lines on Figure 1) on the 153 millimetres by 153 millimetres circuit board.

Input from 220/240 volts AC mains is fused and switched in the normal way. Across the input to the transformer is a 275 volts AC varistor. This device has a very high resistance until the voltage across it rises above 275 volts AC. It then rapidly becomes a short circuit and thus clips any high voltage spikes. The component used is a GEC V275LA20A, or equivalent. It is rated to withstand a short circuit current of 4500 amps for periods of up to 20 microseconds.

The transformer is designed to Club specifications and has a very generous continuous duty secondary rating of 20 amps. The secondary AC output is rectified by a 35 amp bridge rectifier and smoothed by 33600 mfd of capacity (six 5600 mfd 40 volt high ripple current capacitors in parallel). Since the rectifier generates some 30 watts of heat, it is essential that it be mounted on a good heat sink. A 75 millimetre length of Minifin is recommended.

A 200 ohm 20 watt resistor, consisting of two 100 ohm 5 watt units, is paralleled across the

capacitor output as a safety measure. It ensures that the large (and dangerous) charge in the capacitors is quickly bled off when the power supply is switched off. (It is recommended that these five watt resistors and also those in the 2N3055 emitters be mounted on standoff spacers to reduce the heat they could apply to the circuit board. —Tech Ed.)

The smoothed DC then goes through a heavy duty relay whose contacts are in the closed position if the relay coil is unenergised. When and if the coil is energised, these contacts open, DC to the rest of the supply is cut off, and an overvoltage indicator LED lights up.

The primary regulator is a 723 14 pin DIL device. It has been around for a long time and is an industry standard, consequently, its long term availability is assured.

The circuit configuration of the 723 is quite conventional and is taken straight from the maker application data except that some additional 10 ceramic capacitors have been strategically placed around it to prevent RF interference and subsequent malfunction in strong RF fields.

The output of the 723, whose level is set by an on board 1k0 trimpot, drives the base of a single 2N3055 which, in turn, drives the bases of eight paralleled 2N3055 pass transistors. The 2k2 resistor (between the base of the driver 2N3055 and earth) assists stability and the 1.0 mfd 100 volt GreenCap across it provides some additional mid-frequency smoothing.

The use of eight 2N3055 pass transistors is quite deliberate. It is true that a 2N3055 can pass 10 amps but, at this current level, the DC gain has dropped to an alarmingly low level and little or no regulating capability remains. Assuming that the 2N3055 is at the lowest end of its DC gain specification then each pass transistor should carry no more than 2.5 amps if the capabilities of the driver transistor and the 723 are not to be overtaxed.

Like the rectifier, these pass transistors must be mounted on adequate heat-sinks and it is recommended that four 150 millimetre lengths of Minifin be used, with two transistors on each piece.

Each of the eight pass transistors has a 0.22 ohm five watt "current sharing" resistor in its emitter. The other ends of these eight resistors are joined and go to the output terminal through three paralleled 0.1 ohm five watt resistors. These three resistors have an effective resistance of 0.1/3 = 0.033 ohms. At 20 amps drain or greater, the voltage drop across this 0.033 ohms exceeds 0.67 volts and is applied across pins two

and three of the 723, whose internal circuitry then progressively reduces its voltage output, and thus the voltage and current drawn by the external load.

The overvoltage protection acts as follows: For outputs of up to 15 volts, the Zener diode does not conduct. Above 15 volts it does conduct and a voltage appears across the 470 ohm resistor between the zener and earth. This voltage is filtered and applied to the BD139/BD140 combination which causes them to draw current through the relay coil. This breaks the DC supply to the regulating section and energises the overvoltage indicator LED. The supply will remain in the cut off condition until AC is removed from the transformer primary and the capacitors discharged through the 200 ohm 10 watt resistor across them.

Optional voltage and current monitoring can be obtained by means of a 0 to 30 amp meter in series between the output from the PCB and the front panel positive terminal, while voltage can be measured by a 0 to 20 volt meter across the output terminals.

It will be noticed that the supply is "floating", ie the supply is not connected to the mains earth. The mains earth is connected only to the electrostatic shield of the transformer and to the metalwork of the case used. It is recommended that this mains/shield/case earth lead be brought to a separate front panel terminal for connection to the negative supply output terminal if required. The PCB corner mounting holes are not connected to any "earthy" tracks on the board itself.

Normally the voltage setting potentiometer is on the control board and is set to give one, and only one, output voltage. However, if required, this pot can be omitted and replaced with a 1k0 linear standard pot which can be mounted on the front panel. This will enable the output voltage to be varied as required between a low of eight volts and the upper limit of 15 volts determined by the overvoltage circuitry.

Connections shown in Figure 1 by the thick black lines should be in wire capable of handling at least 20, but preferably 30 amps.

The supply can be "packaged" to suit individual requirements although it is strongly recommended that some sort of enclosed case/cabinet be used for safety reasons.

Anyone wishing to construct this supply can obtain further information and advice, by writing to:

The Project Officer, Moorabbin and District Radio Club, PO Box 88, East Bentleigh, Vic. 3165.

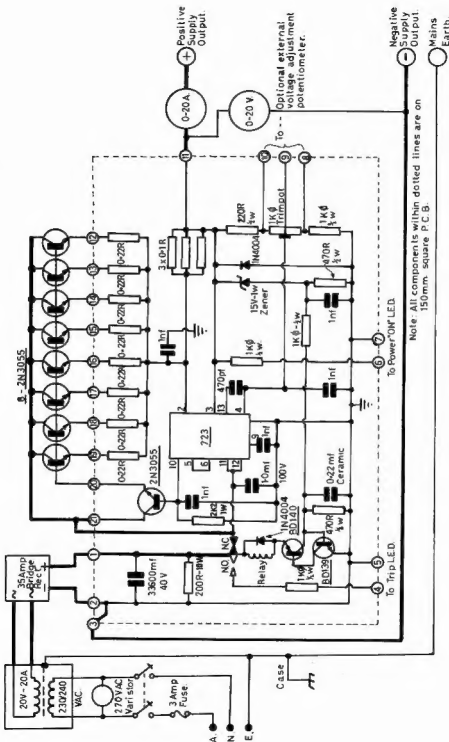


Figure 1: Mark IV 20 Amp Power Supply.

TWO METRE PROPAGATION AND TEMPERATURE INVERSION

John Byrne VK3DNK

5 Stanley Street, Wodonga, Vic. 3690

With two hobbies, amateur radio and flying, it has been possible to unite the two in two ways.

THE FIRST NECESSITY was to be able to receive Morse code at 10 words per minute to enable the attainment of an Instrument Rating. This directly led to amateur radio and possibly the first licensee to pass the CW test before beginning to study for the Theory Examination.

The second, and more relevant necessity to this article, was the acquisition of a good working knowledge of Meteorology. Ears were "pricked up" when it was learned that VHF propagation was enhanced by Temperature Inversions. This interest was further enhanced when, after obtaining the amateur licence, it was realised that the home QTH was in an area of poor propagation and that there were a number of two metre repeaters within range and the ease, or otherwise, with which they could be accessed were all different. This is because of their varying distances from the QTH in Wodonga.

The main repeaters within reach with a FT-290R fed into a 30 watt Alinco linear and using an isopole antenna are as follows:

1. WODONGA — local and always with a half-watt.
2. WAGGA — about 100 kilometres away with some hills in the way. Often reachable with 30 watts, but rarely with 2.5 watts.
3. CANBERRA — about 180 kilometres away with some of the Great Dividing Range in the way. Less often with 30 watts and rarely with 2.5 watts.
4. SHEPPARTON — about 130 kilometres away with some hills in the way. Rarely with 30 watts and only once or twice with 2.5 watts.
5. BENDIGO — about 200 kilometres away. Harder to reach than Shepparton and always 30 watts required.

The ability to reach the various "difficult" repeaters is clearly related to the presence of Temperature Inversions. Over the years, the writer has come to some conclusions about this, much of which is logical but there are also times when one would expect propagation to be excellent, only to discover it is not! This article is not intended to be a definitive treatise, but rather to incite some discussion and hope that some other readers may be able to answer some of the questions which I can not.

TEMPERATURE INVERSIONS

Under normal circumstances, as one rises in the Troposphere, ie the lower part of the atmosphere from ground level to the start of the Stratosphere, the temperature normally falls at an average rate of two Centigrade degrees per 1000 feet. This can be shown graphically. (See Figure 1).

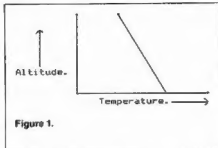


Figure 1.

A Temperature Inversion is said to occur when this "normal" temperature drop is reversed, ie temperature rises as we go higher in the Troposphere.

This can be shown graphically as in Figure 2.

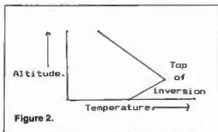


Figure 2.

It needs to be realised that for a parcel of air to rise in the atmosphere, that parcel of air must be warmer than the surroundings. This is because the warm air is less dense than its surroundings, ie it is lighter and thus can rise.

If one considers an inversion it soon becomes apparent that, as the temperature actually rises with height, any air which attempts to rise will rapidly stop, as it will become cooler than its surrounds and thus sink. Not only will air be unable to rise when an inversion is present, but neither will any particles which are in the air, such as smoke. Thus, one frequently sees smog around large cities under inversion conditions, as the smoke and other impurities will be unable to rise and therefore be dissipated in the atmosphere.

Under inversion conditions, the atmosphere is said to be stable. It should be realised that there is a definite upper limit or "lid" to an inversion. It is this lid which traps VHF waves and prevents their escape into space and ducting occurs providing both antennas are in the inversion layer.

TYPES OF INVERSION

1. Radiation Inversion

This type of inversion occurs on a clear, windless night. The ground radiates heat out into space and the air near the ground becomes cold. This cooling effect is generally limited to about 100 to 200 feet above ground level. Thus, we find that the air near the ground is colder than that higher in the atmosphere and consequently a temperature inversion exists.

One would expect that the inversion would increase in intensity as the night went on as more heat was radiated away from the ground. This, in fact, is what happens and this type of inversion reaches its maximum intensity around sunrise. Further to this is an effect that the first rays of the sun may have on the inversion. The sun can cause mild turbulence in the air around sunrise and mix up the air in the inversion. This has the effect of colder air rising in the inversion and intensifying the difference in temperature between the inversion and the air above it. Thus the boundary line between the two (or the inversion lid) is more marked.

RADIATION FOG — Fog occurs when air is saturated to 100 percent. This temperature is termed the Dew Point Temperature. The colder that air becomes, the less water vapour it is able to hold. Clearly, then, if air is cooled enough and there is enough water vapour in it, there comes a time when Dew Point will be reached and water vapour will condense out of the air. When the air is cooled as a radiation inversion is formed and conditions are right, then water vapour can condense out as fog.

As the cooling occurs in consequence of heat being lost by the radiation of heat, the fog is termed Radiation Fog. Clearly also, when radiation fog is about, we will have a temperature inversion. It could be said that the presence of radiation fog is a visible indication that a radiation inversion is present.

2. Subsidence Inversion

This type of inversion forms in a high pressure system. In a high pressure system, air high in the troposphere sinks into lower levels. This is termed subsidence. This subsidence effect tends to be more pronounced at higher levels than at ground level. When air subsides, it is compressed causing the air to be heated and thus the temperature of this compressed air rises. Now, as subsidence occurs to a greater extent at higher altitude, it follows that the temperature will be higher at higher altitudes. We now have a rise in temperature with increase in altitude and consequently a temperature inversion.

The "lid" for this type of inversion is much higher than it is for radiation inversions and is often up to an altitude of 5000 to 6000 feet. The strength of this inversion is greatest near the centre of the high. The strength of this type of inversion is nowhere near as great as a surface or radiation inversion. It is the subsidence

inversion which causes the smog which is seen around cities.

3. Sea Breeze Inversions

Sea Breezes occur on the coast. The breeze flows from the sea to land, beginning during the morning, reaching maximum about mid-afternoon and fading off at dusk. They are less intense on cloudy days.

Sea Breezes occur because, as the sun beats down on land and sea, the land heats up quicker than the sea. As a consequence of this, the air above the land also heats quicker than that of the air above the sea. Thus, air above the land expands, becomes less dense and consequently rises. Cooler air from the sea flows in to take its place. To complete the cycle, air which rose over land, now flows out to the area of lower pressure over the sea and air which was at some height over the sea now descends to the sea. We thus have one big convection current as illustrated in Figure 3.

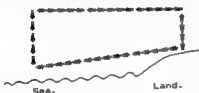


Figure 3.

The important thing from out point of view is that we now have cooler air from the sea in contact with the land and the warmer air which was previously in contact with the land has risen and we have a temperature inversion.

Note here also, as the air in the inversion has been in contact with the sea, it will have a high moisture content. This will also aid two metre propagation as the air above the inversion lid will be drier and will intensify the boundary between the two air masses.

The lid of this inversion is about 500 feet above the ground and these inversions often continue for hundreds of kilometres down the coast.

There are other types of temperature inversions such as frontal and turbulence inversions. As this article is not a full treatise on temperature inversions but only as they affect two metre propagation, they have not been included in this discussion.

To conclude this part of the discussion, we know that a temperature inversion is present if we have

- (a) Sea Breeze — Sea Breeze Inversion
- (b) Cloudless Windless Night — Radiation Inversion
- (c) Radiation Fog — A visible indication of a Radiation Inversion
- (d) High Pressure System over the top — Subsidence Inversion
- (e) Smog or Haze — will usually be a visible indication of a Subsidence Inversion

EFFECT OF TEMPERATURE INVERSIONS ON TWO METRE PROPAGATION

Living in an inland area, experiences of long distance two metre propagation largely relate to inland areas.

RADIATION INVERSIONS are common inland and are more intense in the winter months. There is no doubt that this type of inversion improves propagation and is responsible for the

ability to get into repeaters late at night, when one is usually able to during daylight hours. The writer has found that radiation inversion by itself does not achieve enormously great distances. With pure radiation inversion it is usually possible to reach the Wagga and Canberra repeaters, but not the Shepparton or Bondigo ones from the Wodonga QTH.

THE EFFECT OF SUNRISE is something that had not been considered until the writing of this article. However, it has been found that this intensifying of the inversion improves propagation, sometimes very dramatically. One morning, it was impossible to reach any repeater other than the local Wodonga repeater, however, half-an-hour later it was possible to work both Wagga and Canberra on 2.5 watts. It is not known how long this effect lasts as it occurs at the same time as departure time for work.

It is a generally known fact that radiation inversions dissipate at around 1100 in the morning. Whether this enhancement will last this long is unknown!

RADIATION FOG can enhance propagation. There has been no great experience of this at this QTH but it has been noticed on several occasions that it is possible to access the Shepparton repeater during the day when radiation fog has been present. On all of these occasions there has been fog of great height and possibly subsidence inversion has also been present. Be that as it may, the message is that it is worth trying for long range two metre propagation when significant fog is around.

SUBSIDENCE INVERSIONS are commonly seen in this area, sometimes with inversion haze. It has been realised that, when inversion haze is evident, especially in the winter, outstanding propagation is very likely to be achieved. There is no doubt that when inversion haze is present in the day, improved propagation is available. However, as very little two metre operation is conducted during daylight, outstanding propagation has not been experienced, but others may have different experiences! On purely theoretical grounds one would not expect spectacular propagation in the day as subsidence inversions are not all that strong.

It is a completely different matter at night. Here we have added to the subsidence inversion, the nocturnal inversion and this is capable of producing some very spectacular contacts.

Whilst writing this article, the weatherman obligingly dumped the most intense high pressure system over Victoria since 1925. The Barometric Pressure peaked at 1043 Hectopascals in Wodonga. This high arrived on June 30, 1987 and finally departed on July 10, 1987. The centre of the system wandered from the south of Melbourne over most of Victoria and finally, on the night of July 9, 1987, it centred itself over central New South Wales. It reached just into Victoria and the barometric pressure was still 1040 in Wodonga although the centre was at least 600 kilometres away. It had been noticed during the day that there was moderate inversion haze to the north and that propagation was excellent. That night, whilst working in the shack and listening to the Wagga repeater, it was noted how clear the repeater was. I decided to put out a call to Wagga, but instead called on Channel 1 Bob VK2XEH, in Lithgow, and Alan VK2BAS, in Sydney, replied to the call and I thought how well they were doing to get into Shepparton, especially when Bob commented that he was using a hand-held! It finally evolved that I was working into the Western Blue Mountains Repeater at Oberon. This QSO began at 2005 EST and

concluded at 2030. There was also a short QSO with VK2CBD, at Dubbo, before he was drowned out when the Shepparton repeater could be heard, but not accessed. Following this was a 30 minute QSO, on the Orange repeater, with Reg VK2ELG, who lives near Albury. We were joined by Peter VK2ETK, mobile in Orange.

Following these two contacts, both repeaters faded at 2150 EST. How is this explained?

The two long range QSOs are explained by the fact that the area was under the influence of an intense high and there was visible evidence of a subsidence inversion. Further, it was a cloudless night. Thus there was a radiation inversion adding to the effect of the subsidence inversion. My experience of this is very definite that, when these two types of inversion are present, we have nights of exceptional two metre propagation. The propagation was to the north as that is where the high, with its inversion, was present.

Channel 1, at Shepparton, was not accessible, even though the same channel at Oberon was accessible at very much greater distance, because it was not in the centre of the high. Also, there was some high cloud in the area which would have reduced the intensity of the radiation inversion at Shepparton.

Why did propagation fold-up at about 2200 EST? One would have expected that propagation would have continued to improve as the radiation inversion continued to intensify. This was not a "once off" observation. If it was, then it could be explained by the movement of the high and a consequent loss of inversion. On the contrary, it has been found when these exceptional nights occur that it shuts down between 2200 and 2300 EST every time! I am at a total loss to explain this.

No practical experience of propagation allowed by SEA BREEZE INVERSIONS has been experienced. However, whilst holidaying at Iluka, on the north coast of New South Wales during May 1983 I was advised by some locals that long hauls were very common up and down the coast. If the sea breeze inversion is responsible, it follows that good propagation should occur in mid-afternoon when the sea breeze is at its height.

CONCLUDING

1. Pure radiation inversion causes a moderate improvement in propagation late at night
2. Subsidence inversion causes moderate improvement in propagation in the day
3. Spectacular propagation occurs at night when radiation and subsidence inversions combine. It occurs relatively early in the evening about 2000 to 2100, and ceases between 2200 and 2300 every time
4. Considerable improvement in propagation may be present in the day when heavy fog is around and covering a wide area.

Have any other readers any theories on the following:

1. Why does propagation cease between 2200 and 2300 every time on nights of spectacular propagation?
2. How long does the "sun string" effect last?
3. Do sea breeze inversions cause long range propagation on the coast in the afternoon? If not, are there regular times when long range propagation occurs on the coast and can this be explained by temperature inversions?

REFERENCES

1. Manual of Meteorology, Part 1 General Meteorology.
2. Manual of Meteorology, Part 2 Aviation Meteorology.

REPORT TO EXECUTIVE ON SPECIAL CALL SIGNS

In examining call signs and extant WIA policy three categories can be identified; these are call sign suffixes, call sign prefixes and special call signs.

CALL SIGN SUFFIXES

Call sign suffixes are allocated as follows:

All two-letter suffixes except AA and WI — full call licensees.

AA — official DOTC call signs.

WI — usually assigned to WIA.

Three letter suffixes.

AAA — AZZ Full call licensees.

BAA — BZZ Full call licensees.

CAA — CZZ Full call licensees.

DAA — DZZ Full call licensees.

EAA — EZZ Full call licensees.

FAA — FZZ Full call licensees.

GAA — GZZ Not allocated.

HAA — HZZ Not allocated.

IAA — IZZ Not allocated.

JAA — JZZ Combined licensees.

KAA — KZZ Combined licensees.

LAA — LZZ Not allocated.

MAA — MZZ Novice licensees.

NAA — NZZ Novice licensees.

OAA — OZZ Not allocated.

PAA — PZZ Novice licensees.

QAA — QZZ Not allocated, can be confused with Q codes.

RAA — RZZ Beacons and repeaters.

SAA — SZZ Not allocated except Scout groups.

TAA — TSZ Limited licensees.

TUA — TZZ Limited licensees.

UAA — UZZ Not allocated.

VAA — VZZ Novice licensees.

WAA — WZZ WIA emergency, Divisional and club call signs.

XAA — XZZ Limited licensees.

YAA — YZZ Limited licensees.

ZAA — ZZZ Limited licensees.

Note: Certain "non-standard" suffixes are allocated including RAN GGx, TTx, ITU, BSx, SJx, etc.

CALL SIGN PREFIXES

In addition to VK, the prefix AX was authorised for special events upon application to DOTC. The 1981 agreement as to "special events", as contained in AR, May 1981, was:

"Stations in the amateur service will, for as long as the prefix is not required by the Australian Administrations for the identification of stations in any other service, be permitted (at the amateur licensees option) to use the prefix 'AX' in lieu of the prefix 'VK' on the following conditions.

1. Except in special circumstances, such use shall be restricted to a continuous period of two months, not earlier than two years from the last day of the previous period of such use.

2. The time of such use shall be nominated by the Wireless Institute of Australia, and then only to coincide with, or relate to an event of National, and not local, importance.

3. Except in special circumstances, and in order to allow the Administration to give some notifications as are necessary, the nomination of the period shall be made by the Wireless Institute of Australia at least six months prior to the first day of the period nominated.

4. Any question as to whether "special circumstances" as referred to 1 and 3 have arisen shall be resolved by discussion between the Wireless Institute of Australia and the Department.



5. We have provided for exceptional circumstances of 1 and 3 of the conditions to meet the case of an event of national importance that may not be foreseen, for example, the coronation of a monarch."

The 1982 Federal Convention confirmed this policy (82 121) noting the value in keeping the prefix "exclusive". At a later date VI was sought and approved as an alternative as a special prefix.

SPECIAL CALL SIGNS
At the request of the WIA, DOTC have sought approval for and authorised special call signs not constructed to the international format. These have been for limited use on national occasions,

(thus satisfying 82 121) and included:

VK75A, VK5JSA, V188ABC, ACT, NSW, WIA and XPO, etc.

RECENTLY PROPOSED DOTC POLICY

Recently DOTC proposed a policy, expressed in a letter dated May 10, 1988, which can be summarised as follows:

AX

- for special national and international occasions.
- available for all amateurs.
- fixed duration (of the occasion)
- available only through WIA representation.

VI

- for special state and local occasions.
- available for any group or individual
- fixed duration (of the occasion)

Six months notice applies for requests for either prefix.

IMPLICATION OF DOTC POLICY

The new DOTC policy above retains the exclusiveness of AX, through its limited use, however VI is downgraded to a lesser status. Given the need to cover both situations and the fact that the WIA does not have to be involved in seeking approval for use of VI the conditions are acceptable.

A further possible variation is the WIA offering to control the authorisation of VI, a title like the RSGB manages the GB series of special event prefixes.

Ron Henderson
May 30, 1988



Try This!

Peter Brand VK3BPB
436 Raymond Street, Sale, Vic 3850

ADJUSTABLE GUY LENGTHS FOR MASTS

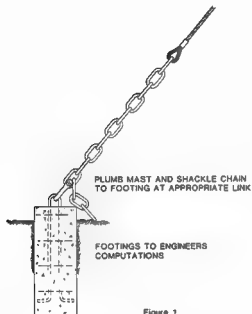


Figure 1

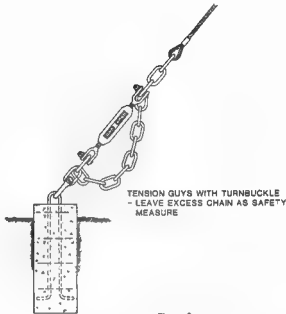


Figure 2

To have considerable adjustment on each guy in many instances would be of great value but hard to achieve. However, by finishing each guy with a piece of chain (as in Figure 1), does achieve this to a certain degree. Two guys are secured, at their correct length, to their footings with a shackle at the appropriate link. The third guy is secured loosely to its footing in the same manner. The system being tensioned up by installing a turnbuckle in the last chain as in Figure 2.

If "little fingers" get at the turnbuckle and undo it then your mast is still safely held up on its chains. By adjusting which link you shackle on to the footing, you can plumb your mast quite accurately. Swaging the chains directly on to the guy wires looks neat and quite professional. Try a local "yachtie" if you don't have access to a rigging service.

The problem of determining the lengths of guys before the erection of a mast can be quite difficult particularly on sloping ground.

FACELESS

GOT THE DX
REALLY BAFFLED
THIS TIME !!

HOW COME !

THEY DON'T KNOW
WHO THE TWO VK
BICENTENNIAL
COUNTRIES ARE !!

—VK3E2B

INTELSAT

Welcome to the fascinating world of television receive only (TVRO), commonly known as "Satellite TV"

Although commercial users have been using satellites for many years, the size and cost of most of the large installations necessary in the early days made it prohibitive for hobbyists to become involved.

However, recent launches of more powerful "Intelsat" series satellites, as well as a mass production of hi-technology receiver components for the American and European markets has enabled Dick Smith Electronics to bring the world of Satellite TV to the backyards of enthusiasts in Australia.

Following is information to give a better understanding of how Satellite TV works and what is required to allow the hobbyist the receive these television signals.

SATELLITE TV — HOW IT WORKS

A television signal originates at the television studio where it is fed to a dish that "uplinks" the signal to one of the many orbiting satellites, 37,800 kilometres above the surface of the earth. The satellite receives that signal, alters its frequency (it cannot receive and transmit on the same frequency) and then beams the signal back to another part of the earth via the "downlink" where a satellite dish receives it.

The downlink signal, leaving the satellite is quite weak and, by the time it reaches us, the signal is extremely feeble, far weaker than a normal television signal. Depending on the satellite and the on-board transponder used, most returning signals are aimed at the equator and the intensity of the signal decreases as one moves north or south.

The pattern of satellite signals made on the earth's surface is known as "the footprint". On paper, a footprint looks like a concentric circle created by dropping a stone into a still pool of water. At the centre of the innermost circle, the signal is strongest and grows proportionally weaker the further away from the central point. This means that the further one lives from the centre of the circle, the more sensitive receiving equipment is required.

Only a few pieces of equipment are needed to receive the satellite signals.

1. a suitably sized parabolic dish antenna
2. a low noise "block converter" (LNB)
3. a feed horn assembly
4. low loss coaxial cable
5. a suitable satellite receiver, and
6. a multi-standard television or video monitor.

The dish antenna is made of highly reflective materials which gather and focus the weak satellite signal into the feed horn which is mounted at the focal point of the dish. The feed horn channels the signal into the low noise block converter where it is greatly amplified, and the entire "block" of satellite frequencies (3.7 GHz to 4.2 GHz) is then translated down to a lower, more useable "block" of frequencies (950 MHz to 1450 MHz) before being sent down the coaxial cable to the receiver. The satellite receiver operates in a similar manner to an AM/FM tuner, it provides the controls to tune various channels — like the various stations on a tuner. (Each transponder on the satellite, and there are many, can downlink a different channel).

The satellite receiver provides sound and picture outputs for a suitable video monitor or television. Unfortunately, there is no one world standard for colour television signals. Because of the inter-

national nature of Satellite TV, several different transmission standards are often receivable from the one satellite; the satellite simply relays the same standard as was uplinked to it.

To watch colour pictures from all countries of origin a multi-standard video monitor (now readily available) or separate televisions or monitors is required. The major transmission types are PAL (as used in Australia, New Zealand, Britain, and some of Europe), NTSC 3.58 (similar to NTSC used in the USA and Japan) and SECAM (as used in France, USSR and French possessions).

The particular satellite we are interested in is called Intelsat 5-F8, which is located above the equator at 180 degrees East. This satellite, which operates in the 4 GHz "C" band, provides a number of transponders of differing signal strengths to the Australia/New Zealand area. Depending on the location, dish size and accuracy, and the program originators, it is possible to receive the following signals as of March this year.

1. AFRTS (Armed Forces Radio and Television Service) — an NTSC transmission designed to be received by US military personnel in the Philippines, Korea and the Pacific area. This signal is presently the strongest one of the satellite. There are also two FM radio stations on this transponder, but their signals are very weak, and would require special external filters for satisfactory reception. Most AFRTS programs are of a news/sports/current affairs type and primarily originate in the USA.

2. JISO — an NTSC transmission bringing programs from the USA to Japan, mainly in Japanese language. Because this signal is primarily intended for Northern Hemisphere reception, it is very weak, and requires a larger dish

and/or a northerly location for satisfactory reception. As of early 1988, only sporadic use of this transponder has been noted.

3. BBC/NZBC — a PAL and/or NTSC transmission bringing programming from the USA to New Zealand and the Asian region. This signal is also weak, but is usually acceptable when viewed on a narrow band satellite receiver.

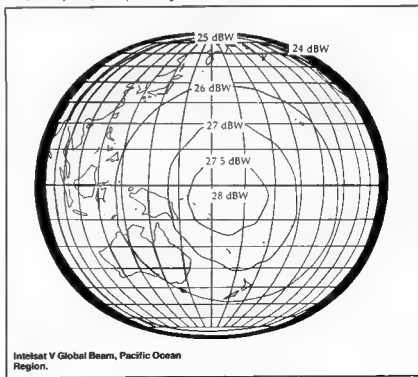
4. RFO — a SECAM transmission covering mainly local news and events in French possessions in the Pacific area. This program is in French, and is assumed to be uplinked from Tahiti, or possibly New Caledonia.

5. CNN (Cable Network News) — a new NTSC transmission originating in the USA. Programming is news-oriented, much of it is of domestic USA interest, but with some emphasis on world news.

6. World-Net — a PAL transmission prepared by the US Information Service to commence in late 1988. Programming is expected to follow similar lines to present transmissions to the Middle East and South Asia (approximately three hours daily).

There are also several downlinks to Sydney television stations TCN-9 and ATN-7, but these signals are encoded using a system called Thompson CSF videoplexing, and are not watchable by the home viewer without suitable decoding equipment. Their material may also be subject to copyright.

As Intelsat 5 is not yet fully utilized, intermittent use is made of spare transponders for video feeds: these often spring to life for short periods, then disappear. It is worth tuning across these transponders occasionally in search of new program material.



Intelsat V Global Beam, Pacific Ocean Region.

QUESTIONS AND ANSWERS

Following are some of the most commonly asked questions on Satellite TV

How large a dish will I need?

This depends on where you live and the quality of reception that you require. If you live in northern parts of Australia (eg Darwin or Northern Queensland) or in Papua New Guinea you can use a minimum dish size of 3.3 metres diameter.

If you live in the central or southern parts of Australia then a larger dish (eg 4.5 metres or more) would be required. The size of the dish is also influenced by the noise temperature of the LNB used (higher noise LNBs require larger dishes for satisfactory operation). A 45 K noise temperature unit is suggested.

Will rain or snow interfere with my Satellite reception?

Unlike AUSSAT signals, which operate on a much higher frequency, severe rainstorms cause only a very slight amount of interference to the satellite signals.

How far from my house should the dish be?

Ideally, the dish should be situated no more than 20 metres from the house. Longer distances would require additional cable runs of lower loss cable, and possibly special in-line amplifiers to ensure you receive the best possible signals. The dish must also be placed so that there are no obstructions between it and the satellite (eg trees, houses, power lines, etc) for best reception.

Is the installation of a Satellite receiving system legal?

Yes, there is no requirement by the Australian Government for you to have a license to operate a home satellite receiving system providing the dish antenna is no larger than five metres in diameter. It is wise to check with your local council regarding building permits that may be required before you install the dish.

Can I run more than one television or monitor from my system?

Yes, this can be done in two ways. Firstly, you can run several suitable televisions or monitors using similar techniques to those used in normal video installations (eg each unit shows the same picture).

Secondly, you can install special "block" style amplifier/splitters in the cable run between the LNB and the receiver, and run a number of "block" outputs to separate Satellite receivers in different locations. This method requires a separate receiver and monitor combination at each location, but allows each user to tune to a different transponder. This would also allow people to split the cost of the Satellite dish system among several nearby households, however care would need to be taken that this did not contravene any Department of Transport and Communication (DOTC) or other Government regulations.

Can I paint my dish to blend in with the environment?

Yes, as long as you do not use paint with a metallic base, there should be no problems doing this providing you choose a reflective finish to reduce heat problems. This really means — do not use black!

What is the probability of lightning striking my satellite dish?

The probability of lightning striking the dish is about the same as lightning striking a normal roof top television antenna — a risk, but not very high. When was the last time you heard of a lightning strike on a television antenna?

How do I know where to point my dish?

To accurately point your satellite dish you need to know the magnetic bearing and elevation of the satellite relative to your location. Using a computer program or printed co-ordinates based on your latitude and longitude it is relatively easy to obtain these figures.

How long will I be able to watch Satellite TV?

Australian hobbyists have been watching the Pacific Intelsat Satellites now for many years. As traffic on Intelsat satellites in general has in-

creased dramatically over the last five years, it would appear certain to continue. The re-location of Intelsat 5-F8 with its increased television capacity and higher signal strengths should provide a variety of material for you to watch on your Satellite TV system.

How do I obtain multi-standard Video Monitors in Australia?

Suitable multi-standard video monitors are now readily available from many sources in Australia. These include the following companies. Sony, Sanyo, National, and JVC. Screen sizes vary from around 14 inches up to 27 inches.

How do I know what programs are on at what time?

As most of the transponders on Intelsat 5-F8 are of a commercial news/sport feed nature, it is difficult to predict their program content and times of operation. However, the AFRTS network does publish program and time data in several US monthly publications.

Can my Satellite system suffer from local interference?

Because of the extremely high frequencies used by the satellite system, the chances of local noise sources (eg car ignition, etc) as are seen on standard television sets, interfering with the satellite signal are extremely remote. However, in some parts of Australia, microwave frequencies are used to carry information over short distances (usually between dish antennas mounted on towers in elevated locations). These signals can cause interference if they are close to your satellite system — it is wise to check with the relevant authority concerned if you are located near one of these microwave towers.

GENERAL NOTES

Good reception of satellite television signals depends on absolute minimisation of losses within the ground system. We are dealing with signal levels far below those encountered in normal radio and television reception. After all, the satellite signal has to travel around 38 000 kilometres to earth and the loss of this path is approximately -195 dB.

For these reasons, it is essential that all connections are perfectly made, and that the dish is very carefully assembled.

It is unfortunate that the signal levels found in Australia are one-tenth the intensity of those found in the USA. This is due to the type of antenna beam being used by the satellite. A hemispheric beam gives a reasonable signal level over a smaller area, the global beam used by Intelsat 5-F8 distributes a weaker signal over a larger area.

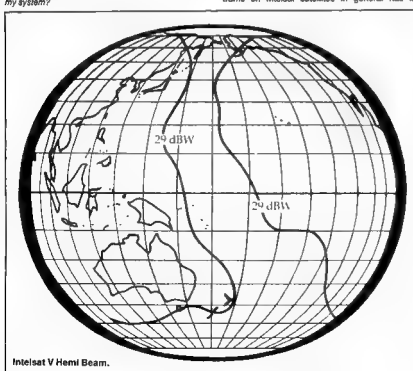
The assembly of a complete 4 GHz satellite receiving system is complex but the results are immensely satisfying. However, it cannot be over-emphasised the importance of accurate assembly of the system. Failure to assemble the dish correctly will definitely result in a very poor picture or no picture at all.

THE SATELLITE, INTELSAT 5

Unlike their predecessors, the Intelsat 5 satellites are three-axis stabilised satellites with a 51 feet solar wing span. They are equipped with two global coverage horns, two hemispheric zone offset feed reflectors and two spatially isolated circular 11 GHz spot beam reflectors.

The hemispheric and zone beams are spatially separated as were those of the Intelsat 4A series. To allow a four fold increase in frequency over the Intelsat 4 series, zone beams use left hand circular polarisation while the hemispheric beams use right hand circular polarisation. This is referred to as cross polarisation and allows simultaneous use of hemispheric and zone beams in both the westerly and easterly direction.

Some of the Intelsat 5 satellites also carry additional transponders for INMARSAT (the International Maritime Satellite Organisation), to provide communications for ships at sea. The mar-



Intelsat V Hemis Beam.

time sub system is capable of providing the equivalent of 30 full time voice circuits

SPECIFICATIONS

Receiver Specifications

Input frequency 950 to 1750 MHz.
Input impedance 75 ohms.
IF bandwidth: 25/15 MHz.
Switchable input range: -60 to 0 dBm.
Threshold: 8 dB C/N.
Tuning 79 channel PLL plus fine tuning.
Video output level 1 volt p-p into 75 ohms.
Video response 30 Hz to 4.2 MHz.
Audio tuning range 5 to 8 MHz.
Audio bandwidth 150/450 kHz switchable.
Energy dispersal rejection: 40 dB.
Power requirement 240 volts AC 50 Hz 25 watts.
LNB power 18 volts DC 250 mA through coaxial cable.
Video output polarity switchable.
Video de-emphasis CCIR 405 NTSC.

LNB Specifications

RF frequency range 3.7 to 4.2 GHz (RF input CPR229G wave guide).
Output frequency range 950 to 1420 MHz.
LO frequency stability plus 2.5 MHz (-40 to 60°C).
Gain: 64 dB (typical).
Gain flatness plus 1 dB p-p.
Output power plus 5 dBm (at 1 dB gain compression).
Output impedance 75 ohms.
Noise figure 45 K (maximum).
DC supply: plus 15 volts to plus 25 volts DC at 200 mA.

Dish Antenna Specifications

Gain dB (plus 0.2 dB steady state): 44 dB at 4 GHz.
Beamwidth (-3 dB): 1.2 at 4 GHz.
First sidelobe level -22 dB at 4 GHz.
Noise temperature at 30 elevation: 23 at 4 GHz.
Fid ratio 0.38.
Diameter 4.5 metres.
Material type Al/Alu num mesh.

GLOSSARY OF TERMS

"C" Bands

3.7 to 4.2 GHz microwave frequency band.

C/N Ratio Carrier to noise ratio (the ratio of carrier level of noise level measured in decibels -dBw power over one watt).

Base Band Video output signal from a satellite receiver.

dB Decibel — a means of expressing ratios logarithmically. $\text{dB} = 10 \times \log(\text{Power}/\text{Power}_2)$ if power is doubled from 10 to 20 watts, then $\text{dB} = 10 \log(20/10) = 3 \text{ dB}$ (approximately). Therefore, if a signal level footprint shows a difference of 3 dB between one area and the next, only half the signal level is available for reception.

dBi Antenna gain, expressed in decibels, relative to an isotropic or theoretical "point" source.

Downlink The transmitted signal from a satellite to a ground receiving station.

EIRP Effective Isotropic Radiated Power — accounts for total satellite output by combining transmitter RF power and transmitter antenna gain.

Elevation Degrees above the horizon, 0 indicates the horizon, 90 is overhead.

Energy Dispersal A low frequency signal added to the baseband signal before modulation to reduce interference potential. Is removed by satellite receiver.

F/D Ratio of focal length to diameter of a dish antenna. Varies with each antenna — the higher the ratio the higher the aperture (and efficiency).

Feedhorn Provides gain by capturing reflected microwave signals from the dish and concentrating them into the LNB.

Footprints A signal strength map showing the EIRP in dBw contours.

Global Beam Downlink beam covering the entire visible Earth surface as seen by the satellite.

Hemispherical Beam Shaped downlink beam (usually east or west) that covers approximately half of the Earth's surface, as seen from the satellite.

Kelvin (°K) Abbreviation (supoK) is a symbol for degrees Kelvin, a temperature scale measured from absolute zero. Used to compare the extra noise added by the amplifier in the LNB.

Look Angle The elevation of an antenna from the horizon.

Microwaves The name given to a range of extra high frequency signals (above 3 GHz) such as those used in satellite systems.

Parabolic Dish A dish-shaped receiving antenna, normally round, covered with a metallic reflector surface and accurate as a perfect parabola. Focuses all received microwave signal to a single point at the focus of the parabola.

S/N Signal to noise ratio, expressed in decibels.

Sparklines The streaks or dot interference on a satellite television picture, caused by weak signal levels.

Uplink The signal from the transmitting earth station to the satellite.

Wave Guide A specially shaped rectangular tube designed to prevent signal loss at microwave levels.

FURTHER READING

To further increase your knowledge of Satellite TV the following publications are available direct from the USA.

- 1 *World Satellite Almanac* 4300 West 62nd Street, Indianapolis, Indiana. 46268 USA.
- 2 *World Satellite Updates*, MLE Inc. PO Box 159, Winter Beach, Florida, 32871 USA.
- 3 *Coops Satellite Digest* International Edition, PO Box 100858, Fort Lauderdale, Florida, 33310 USA.

DISCLAIMER

Due to the volatile nature of international feeds, it is not possible to guarantee that changes (either additions or subtractions) of those program sources listed will not occur. While every care was taken in the preparation of this information, it is intended as a guide only, and details should be confirmed with relevant authorities before commencing purchase or construction of either individual components or a complete satellite station.

The above information was compiled by Dick Smith Electronics. Further information and equipment for a Satellite TV receiving station may be obtained from Dick Smith Electronics stores and agencies throughout Australia. Illustrations are reprinted from the *World Satellite Almanac*.

A SIEMENS M100 TELEPRINTER 100VOLT 50 MA POWER SUPPLY AND TTL INTERFACE

Ron Mills VK5XW

13 Taylor Terrace, Rosslyn Park, SA, 5072

Many RTTY users have Siemens M100 teleprinters and many different types of modems. The accompanying circuit can be used for interfacing the M100 to a home-brew system or to more sophisticated commercial units such as the Tono Theta 5000/7000/9000 series.

All parts are readily available at minimum cost. The power transformer used to achieve 100 volts by voltage doubling is an Artec AL 7VA/30. Dick Smith stores sell a larger 1 amp 30 volt multi-tapped transformer M6672, as well as the 470 mF 65 VV capacitors and five watt 3K9 wire wound resistors. Although both of the transformers are nominally 30 volts, the final DC voltage is almost exactly 100 volts. Provision is made for TTL IN and OUT with TTL IN available either Normal or Reversed. A HOLD/RUN switch stops the teleprinter from printing or running "open". The transistor TR1 in the LOOP circuit must be of a high enough rating to stand 100-plus volts, eg BF337.

The unit was fitted into one of the multi-purpose plastic boxes, eg 130 x 130 x 75 millimetres. The front panel has the power ON/OFF switch, a red LED power-on indicator, a

green LED LOOP indicator and the HOLD/PRINT switch. The rear panel has a three pin AC power socket to feed the teleprinter motor (controlled by the AC ON/OFF switch), a teleprinter LOOP socket (two-pin microphone type) RCA input sockets for the TTL levels. A fuse is fitted to the 240 volts AC input and the 12 volt 7812 regulator heat-sinked. (The 12 volt supply was found to be necessary to drive the BF337 hard enough to give good clean pulses to the teleprinter magnets).

To stop excessive heat dissipation in the 7805, fit a resistor RX of suitable value to drop the voltage from the 12 volt rail to a value just high enough so that the 7805 does not drop out of regulation. The 7805 will then not need to have a heat sink.

FUTURE OF AMATEUR RADIO

As seen by a Novice-to-be

R A Fenton L20530

PO Box 1062, Bathurst, NSW 2795

I reply to *Future of Amateur Radio* from Peter VK6NNN (now VK6BWI) in the May issue. As a relative newcomer to amateur radio, still working towards my novice ticket, I feel strongly about changes to the hobby to which I am attracted, to which I will give many hours of study, and to which I look for many more hours of pleasure. My comments are not those of a brash school leaver, eager to take the world by storm, but of a person of nearly 50 years, who has studied hard to attain professional qualifications at post-graduate level (I hold a MA in psychology and practise as a psychologist).

To comment on the points Peter raised in the order he gave them —

1 LACK OF YOUTH INVOLVEMENT

Yes, not a lot of amateurs are under 20 years, and to judge by the voices on both Novice and Full Call frequencies, not a lot of under 50 years either!

It seems that the younger amateurs spend fewer hours of operating as well as having briefer QSOs.

I cannot agree that an examination fee of \$30, a \$6 NAOPC fee and \$28 a year for a licence is the barrier. \$64 seems very little when I look at the money 18 to 30 year olds spend on other things around my locale. I would suggest that \$5000 transceivers are not too expensive either — consider the costs of obtaining and running a high performance car or motor cycle, learning to glide or fly, learning and playing golf, taking part in amateur sport, maintaining a record/tape/disc collection with the latest hi-fi, no cost of establishment and running costs are not the identifiable cause of the absence of interest.

I do find the "I built a crystal set" argument, so often proposed, to be quite specious. My generation built crystal sets and one valve receivers — my children's generation had expensive bicycles and surf boards, video games and computer games — the current group of pre-schoolers — who knows? But I doubt, given the cheapness of "rannie radios", that they will ever build a crystal set — any more than we would have, if a week's pocket money could have bought us a radio receiver. We built crystal sets to get radio reception from commercial stations because the average house had one radio set — our parents controlled it and selected the programs. The children around me get an average of \$10 a week pocket money — one week gets an AM transistor three weeks get AM and FM reception and \$100 plus tape decks with AM and FM radio installed are common birthday and Christmas presents.

I'd suggest that the near-ubiquitous CB radios offer the last chance to get young licence holders for our hobby. Instead of sneering at them, we should be out there recruiting like mad while they are still interested! I run 27 MHz and 477 MHz on the country property where we live, for easy and convenient communication with neighbours and as a mobile to base medium. There are at least 60 CB operators within easy range and I have yet to hear a Novice or Full Call "plug" the hobby — the nearest amateur organisation meets in Orange, about an hour and a half away by road and may as well be in Africa as regards its local profile.

We need to look at our public profile and our contact with potential young members, not bewail the fact that nobody builds crystal sets anymore or

that the YRCS ended — after all, if the YRCS had attracted floods of licensed persons, we wouldn't have the problem, would we? and the YRCS would be such a success we would never end it, would we?

2 LESS EXPERIMENTATION

I could not agree more with Peter on this point — yes, open up interest in new modes, encourage experimentation as far as possible. However — why do I keep reading the idea that experimentation must equal building of one's own equipment? This is not a logical statement! Does one have to build an oscilloscope in order to use it? or a racing car in order to compete in non-professional events with a car club? or a skiboat, outboard and water skis in order to live up to the local river on weekends?

NO — experimentation takes different forms in this technically advanced era — and to need not, indeed probably should not, include owner construction as a necessity. The basic need for a sophisticated transceiver, able to operate on several modes across several bands, now seems well established. This need is readily met at much less than the cost of a secondhand car — it leaves much for experiment — antenna systems, ancillary equipment, new modes, portable operation, and so on.

3 SLOW GROWTH IN OUR POPULATION

Yes, it is a case of "use them, or lose them" with commercial interests' eyes on our band allocations. We need to recruit more operators, and (I dare I suggest it!) give Novices more access — and that means all bands that they care to use. I believe this to be the best answer to under-used spectrum space — get the Novice in there on low power and let them experiment with antennas to get out better. Unless the bands are used more, they will go, just as 11 metres went to the CBRS. There is a growing demand by commercial interests for spectrum space — and they will pay government very well to get access. We have to occupy, and be seen to occupy, if we are to have any chance of keeping what we have been lucky enough to have.

4 COST

I asked a group of 20 to 30 year olds recently what they owned that was hobby orientated — and the average was \$15 000 worth! This included stereos and record/tape collections, hot cars, motor cycles, ski boats, sporting equipment, firearms, sail boats and catamarans, equipment for snow skiing and so on. I really think it is time we killed the myth that there are hundreds of people out there — all keen to get into radio but unable to afford it. The facts seem to be that they are out there, but spend their money where their interests lie — and they usually do not lie in amateur radio!

Or do we only want to attract the people who are too broke to do anything else? Would we keep them once they got a dollar?

5. PUBLIC AWARENESS

Yes, Peter has said it all. It is time, we do need a higher profile, we do need to be talking/demonstrating in schools, community organisations and service club meetings, at rural field days and local schools — in shopping centres — anywhere we can be seen and talked to.

6. SUGGESTED APPROACH

And this is where I feel that Peter is banking, not only up the wrong tree but up the wrong entire forest! he wants is to reduce power, go back to basics, build it ourselves — why not revert to pedal powered spark gap transmitters? Several points need making:

a) The sophisticated equipment makes, their agents in Australia, the retailers — all these form a formidable lobby group working for the hobby. Why alienate them and lose their support?

b) Take a close look at the other things people spend money and time on in their leisure activities — most are characterised by sophisticated assemblies, power, ease of operation, specialised service organisations, warranty periods of increasing length, disposability, a thinning secondhand market, and some degree of "throw-away-ability". If we want to match appeal we must influence people's opinions and tastes also. Consider compact disc players and home radios — both cost big dollars, have a relatively short life before being outmoded (by model changes rather than wearing out) and are serviced by specialists. If radio is to be re-instated should it be different?

There will always be room for the home-brewer in radio, just as there is in people's other recreations, but to change the activity only to allow owner-builders will be to kill it stone-dead.

c) Rather than restricting activity to a single band — for that invites acquisition of other bands by commercial users — why not, as I suggested earlier, get the newcomers in on all bands, but restrict their power, using power gain as the bait to progress to Full Call status?

d) "We may expect that, by introducing home construction of equipment to new amateurs, it is quite likely that they will be the future technical pioneers" — I quote and dismiss this on several logical grounds:

i) It is like suggesting that the apprentices are the best source of innovation in a trade, rather than the pioneer tradesmen. It just isn't logical!

ii) The necessity to home-brew may well introduce a proliferation of kits and "plug-together" assemblies so new folk can get on the air — that's what the hobby is mostly about at first — *being on the air*.

iii) When was the last technical innovation or breakthrough recorded as coming from amateur ranks and then adopted by the professionals? With Japanese, American and European R and D projects spending millions of dollars, the idea of new Novices making a breakthrough seems wildly optimistic.

iv) It will drive away more than it encourages. Look at the example of UHF CB — how many would have gone on the air repeaters at all, if they had to home-brew it? Yes, it is very easy to build a FM transmitter for 477 MHz — but the potential users would have stayed away in droves if they had to do it, and the spectrum space would long since have been allocated to commercial two-way operators, or so I think!

v) A comment on power limits. I feel that 25 to 50 watts is appropriate for newcomers, with the main bait to get them up to Full Call status being access to more power — and that alone

Let them taste every band, get to know what goes on there, populate it to keep the authorities and commercial operators at bay, then increase their power allowances improving performance in return for passing advanced examinations. Where is the sense in keeping Novices away from the Full Calls where they could learn more? How many Full Calls use the Novice areas or talk to Novices? How many Novices drop out after a year or so? Why?

7. MODES

Yes, open it up for Novices — get them in a position to taste all the modes on low power. It is from their ranks that the Full Call operators on RTTY and computer packet transfer will come — on all modes, in fact.

Again, the more the allowed bands are used, the better for all of us.

8. EXAMINATIONS

I cannot understand how Peter can propose Novices creating technical innovation — yet he resumes the need to understand VFOs, SSB, superhet circuits and so on. This is illogical.

I think that the present Novice examinations are just about 'spot on'. A reasonably intelligent person who is interested can learn enough to pass. A reasonable entry standard exists, so that exposure to other modes and experience on other bands, plus the prospect of more power, will keep them studying on towards the Full Call licence.

And now to Morse — the source of so much argument amongst amateurs and would-be amateurs alike. Let us discard sentimentality — not that I have no value, but in order to deal logically with the issue for a paragraph or two.

Yes — Morse has

- 1 low cost
- a) for home-brewers.
- b) but not if sent via an expensive transceiver.
- a) it mostly seems to be
- 2 simple type of transmitting equipment — see a) and b) above
- 3 penetration through interference — agreed, though not everybody would want to bother — they operate on telephony or shutdown — it is a hobby after all
- 4 more miles-per-watt — Agreed, but see 3. above
- 5 narrow bandwidth — agreed, but in substantially unpopulated spectrum space does this matter? Gramming the Morse operators in narrow sections of the bands creates a need for this feature. Now there is a little aside-out logic to ponder upon!
- 6 speed — you jest! The human ear and brain can cope with phonemes, the units which make up morphemes, which are the units which make up words, at a faster rate than they can translate letters into words. I will bet anyone that I can speak (intelligibly) faster than they can send. In addition, my voice will carry extra information in intonation and stress characteristics.
- 7 'Most important of all — fun' I could not agree more — but only if one finds it so. Water skiing on bare feet is fun too, but not every skier wants to do it. Current practices in amateur radio make it compulsory to be a barefoot skier at expert level just to start the sport!

What else does Morse do?

1. It acts as a 'mechanism of closure', as the sociologists would phrase it, in other words, it restricts access and keeps people out. It creates an elite who are 'in'. Logically, is this needed at this time in this activity? I do not think so, but others like the idea. It is a question of values, not logic.

Just consider the Spanish experience (May issue, page 58) which doubled the number of licence holders. Were they all 'idiots and good buddies' on this extra 15 000? Did they create problems on the air? It sounds to me as if the other amateurs in other countries were the mavericks — they abused legally licensed

operators (under the laws of the time) who operated ethically? Consider the variation in Morse standards required by various countries, is there any real uniformity? What of licence categories which do not require Morse at all? In Australia, the limited licence demonstrates that Morse proficiency is not a requirement for responsible operation on the amateur bands. Logic wins again, if the reader sets sentiment aside.

2. It provides communication in emergencies and the old chestnut of a ship's radio being broken down and only CW equipment being available is again trotted out. It is really time that this myth was also laid to rest:

- a) current technology extends beyond a single, dependable transceiver on ships at sea
- b) portable satellite communication equipment outperforms that used on the amateur bands.
- c) there really are other operators out there monitoring for ship's in distress — and ship's carry standby equipment to speak to them
- d) when was the last time a ship at sea or an aircraft in trouble was saved by an amateur who knew Morse hearing a broadcast and notifying the authorities?

As I said, a myth which does not either acknowledge the state of the art in commercial equipment, to the realities of emergency procedures in maritime emergencies.

9. RECIPROCAL LICENSING

I am not sure where this one came from, but it does raise several usefully considerable points.

a) Current practices render reciprocal licensing a difficult area. Various countries have various standpoints, no one standard has been accepted world-wide. If we want the activity to continue and even flourish in Australia, we would do well to examine our own population of potential amateurs, then set standards to meet local needs.

An aside, what proportion of Australian amateurs ever seek a reciprocal licence in another country anyway? Or is this another myth — that all of us will be disadvantaged eventually unless we restrict our numbers by adopting a system of licensing that enables reciprocity, with even the hardest of other standards?

In conclusion, I would only say that the continuation of an elite, small in numbers when compared to the spectrum space they rationally occupy, invites the reduction of that space by governments searching for revenue. To adopt practices that keep people out, instead of encouraging them to meet reasonably high standards of technical knowledge in order to get in, seems foolish.

To ignore or denude CEs is to abandon a source of potential members. Only three of the 60 CB operators in my net area are working towards Novice tickets. The others use radio mostly as a tool, not as a recreation, so see no need. Their needs for easy and convenient communications are being met with 27 MHz sets, plus 477 MHz sets and a local repeater. The three that are going ahead see radio as a valued recreation, an interest, a hobby — so work hard to get the qualification we need to gain entry to it. We do this in total lack of contact with local amateurs. There is no local organisation, no classes, no venue for contact, the amateurs are out there, but we cannot make contact — and they do not seem to want to, unless we have already become 'one of them'. I have to ask, do they want more people on amateur bands around here?

I suggest several changes:

1. Novices to have access to all bands.
2. Novices to be able to use all modes.
3. Novices to be restricted to 25 watts for maybe 50 watts power output.
4. Full Calls to be allowed substantially more power than Novices — maybe 500 watts or 1000 watts?
5. Morse operation at 10 words per minute (send and receive) to be a licence endorsement allowing

those licence holders access to the Morse segments of bands, this to apply to Novices and Full Calls alike.

6. Abandonment of the LAOCP. It would no longer be necessary to have it.

The outcome of these changes, plus a concerted recruiting effort by existing amateurs would be the attraction of more people to a valuable recreation resource. It would bring in younger people to allow the activity to continue through future generations. It would provide a useful voting block to impress the governments of the day with the need to provide for the activity, to protect it, and to use it well for the enjoyment of those who see value in it.

I agree with Peter — "Enslave Australia" adopts a licensing system which will benefit all — not just a few greedy zealots who want more for less. Remember that many empires/governments fell due to greed on their own part. Let us ensure that the amateur service does not suffer the same fate. It is only that I see the zealots and the greed which leads to exclusion of otherwise enthusiastic operators to be inside the system, not knocking on the gates. The few who occupy the available spectrum and keep as many out as possible can only become fewer — it will not be the 'outsiders' who collapse the empire, but the commercial operators who want our substantially unused spectrum.

When inquiring about products you have seen in AR, don't forget to mention where you learned of the product!

HELP WANTED

The Federal Office receives a number of excellent reciprocal copies of amateur society magazines from sister societies in other countries.

We need assistance from amateurs who would be prepared to peruse several of the foreign language magazines with a view to keeping us informed of events in those countries, and of interesting technical articles.

Are you fluent in Italian, German, Japanese, Dutch or Korean? Would you like to help, and get to keep the magazines? If so, please contact the Federal Office by writing to Foreign Publications, WIA Federal Office PO Box 300, Caulfield South, Vic 3162.

BICENTENNIAL CALL BOOK ENTRIES

Australian amateurs are advised that subject to the following paragraph, all Australian amateur radio licences will have their call sign's names and notified address, included in the Bicentennial Call Book to be published in November 1988.

However, those amateurs who wish to have their name and/or address deleted from details to be printed, are advised that they may make such a request in writing to the Federal Office, setting out what they wish to have suppressed. Any such requests must be received by the Federal Office on or before August 31, 1988.

The Wireless Institute of Australia will take all reasonable care to meet licensees' wishes, but the Institute will not be responsible for any errors or omissions. Insofar as its members are concerned, the Institute will rely on information as to current addresses held in its own records.

THREE AUSSIES AT DAYTON HAMVENTION

Jim Linton VK3PC

4 Ansett Crescent Forest Hill, Vic. 3131

"It's absolutely incredible — something that has to be seen to be believed." That was how Ron Fisher VK3OM, described the experience of his first Dayton Hamvention.

The 1988 Dayton Hamvention, Ohio, attracted some 37 000 people said to be a 30 percent increase on last year's attendance.

The registration fee of \$8 covers admission to the three days of the Hamvention held at the Hara arena, about 10 miles north of Dayton, plus a free shuttle bus service to your hotel accommodation.

On the Saturday night, the Hamvention banquet at an additional charge was held in a big convention centre in the city of Dayton also serviced by shuttle bus.

Ron Fisher guessed that in excess of 2000 sat for the dinner "Everybody who was anybody was there," he said.

One interesting character was Ken "Judge" Glenzer K7SCO, of Seattle, a prolific author on antennas and associated items. As a result of his meeting with Ron, articles from Judge will be appearing in the WIA journal, *Amateur Radio*.

The Hamvention starts at noon on the Friday and goes through to the Sunday afternoon.

The Hara Arena consists of three large halls, and an arena used for indoor sporting events. Inside the halls were 500 stall spaces for



The Emtronics stall at Dayton Hamvention.

wholesalers, retailers, manufacturers, organisations such as the ARRL, magazine publishers, and shortwave listener groups.

Ron said: "It was an amazing scene with probably about four big retail distributors in stalls with enormous quantities of gear stacked 10 feet high and up to 50 feet long, ready for sale.

"In general, probably the gear was priced two thirds or less two thirds that you could expect to pay in Australia."

Well placed near a main arena entrance was Rudi Breznik VK2AOT, manager of Australia's Emtronics. Rudi has been to Dayton about seven times, but this was the first occasion he had set up a booth. It was decked out with Australian national flags, the boxing kangaroo flag of America's Cup fame, and toy Koalas climbing the TET-Emtron HF beam.

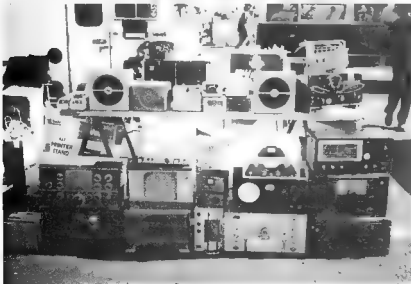
As if that wasn't enough to catch the eye, Rudi had up a large poster of Michael "Crocodile" Dundee.

Rudi said there was great interest in the TET beam and the other products by Emtronics on display.

Using his salesman's pitch for virtually the entire three days he was said to have notched up orders for the TET beam. On return to Australia he reorganised his factory to meet the demand in the US and Japan.

Rud also found time to meet those from England, South America, Africa, and Germany who gather at Dayton to discuss industry trends and swap ideas.

In addition to the selling stalls, the arena has about seven large auditoriums where forums were held for the three days. These forums were



The Flea Market site.

on every subject you could imagine — DX, antennas, specialised techniques, and short-wave listening.

"You could literally go to the forums doing nothing else," Ron said.

Ron was pleased to have caught up with his on-air friend, Hal Slater G3FXB, giving an interesting side talk about his various trips to Russia.

Dayton's famous car park Flea Market was so large Ron only managed to see half of it, but was not very impressed. He said everything from new equipment, secondhand gear from good quality to absolute junk, was being offered. But, generally speaking, the prices for recent gear were fairly high — for example an FT-10E was labelled at \$US400 — in VK you would expect to pay about \$A400 for the same unit.

Accompanying Ron was his wife Lynette. She took in some of the Hamvention, but also enjoyed the very big program of alternative activities for YLs. These were at a separate location, and serviced by a shuttle bus. The activities ranged from weaving, cooking, breadmaking, to genealogy, and was described by Lynette as "quite enjoyable".

TO THE EMPLOYED AMATEUR

Persuade your company to
advertise in *Amateur Radio!*



REEFTON — a world leader in electricity

Before New Zealand's main centres, before Australia's thriving cities, even before the fashionable suburbs of London and New York — Reefton had its own power supply.

The Reefton electric power scheme was completed and potential consumers offered connections from August 4, 1888. It was the first public supply of electricity in New Zealand and among the first in the world. People's lives were about to change as electricity not only lit up their streets, but eventually powered new labour-saving devices in their homes, shops, offices and other workplaces.

The Reefton Electrical Transmission and Lighting Company was formed at a meeting on December 6, 1888. There were 65 shareholders, all locals, ranging from hardhatters and clerks to sailors and tinsmiths.

It took 20 months to build the race, install the machinery and wire the town. Total cost was £7000.

The powerhouse was equipped with a 70 horsepower Ratel vertical turbine which drove a 20 kilowatt Crompton bi-polar dynamo, designed to light 500 lamps of 20 candlepower.

First reticulation was about 1.5 kilometres long.

Power was generated by turbines harnessing waters from the Inangahua River in the power station. The turbines were tested at 7 pm on August 1, 1888. Three nights later a public exhibition of electric lighting was given at the Oddfellows' Hall by English electrical promoter,

Walter Prince the man behind the idea of installing an electric power scheme in Reefton.

By mid-September 130 lamps were installed, with more on order. Lights were installed by a local tinsmith, Peter Shepherd for £1 a time. He also installed electric doorbells.

In the beginning, power was supplied from sunset to sunrise for £3 per night per year, no matter how much was used. Later the hours of transmission were extended each Tuesday — ironing day.

Reefton is a small town of 1500 people (in 1988) in the South Island of New Zealand, about 50 miles inland from Westport and Greymouth.

A week of festivities, in Reefton is planned to celebrate 100 years of electricity. As part of these festivities, Branches 52, 49 and 36 of NZART will operate special call sign ZL6REC from August 1 to 6, 1988. It is anticipated to use the 40 and 80 metre bands. The groups have unrestricted use of a large empty shop premises on the main street of Reefton.

A special QSL card is being produced and will be sent via the bureau to all contacts logged (County Hunters note — Inangahua County). Please do not send QSLs in reply.

Visit any amateur who would be most welcome to join in the celebrations and assist with the operation.

For further information contact Dave Oates ZL3MF, PO Box 20, Westport, New Zealand.

—Compiled and condensed from information supplied by Bill Stevens VK4YN and Dave Oates ZL3MF.

Who Said SMA Connectors Are Expensive ??????

Whoever it was obviously didn't ask us. Our range of SMA connectors and accessories are not only good value, they work well too.

SMA Loads

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TC17 ... 1 watt FEMALE LOAD

\$58.60 + 20% sales tax



Pd	+ 1W (DC - 18GHz)
Freq	VSWR
4GHz	< 1.05
8GHz	< 1.12
12GHz	< 1.15
18GHz	< 1.20

TC19 ... 1 watt MALE LOAD

\$32.36 + 20% sales tax



Pd	+ 1W (DC - 18GHz)
Freq	VSWR
4GHz	< 1.05
8GHz	< 1.10
12GHz	< 1.15
18GHz	< 1.20

TC18 ... 2 watt MALE LOAD

\$46.90 + 20% sales tax



Pd	+ 2W (DC - 18GHz)
Freq	VSWR
4GHz	< 1.05
8GHz	< 1.10
12GHz	< 1.15
18GHz	< 1.25

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PC67 SMA F-F

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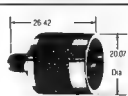
PC68 SMA M-M

\$36.28 + 20% tax



PC67 SMA F-F

\$30.96 + 20% tax



PC68 SMA M-M

\$36.28 + 20% tax



PC58 SMA M to N Male

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TOPICAL TECHNICALITIES

Lindsay Lawless VK3ANJ
PO Box 112, Lakes Entrance, Vic. 3909

The subject of transmitters causing "key clicks" is well-known to licensed transmitters but I have doubts about the theory, the following might provide some food for thought and rekindle the debate.

The output of a transmitter will not contain sidebands if it is a pure sine wave.

If the transmitter responds immediately to 'key down' the beginning of the output wave will be sine wave.

If there is a rise time in the response, the beginning will not be sine wave.

If the transmitter output ceases immediately on 'key up' the output will retain the sine wave shape.

If there is a decay time, the end of the output will not be a sine wave.

Therefore, a deliberately shaped transmitter output wave will radiate sidebands 'key down' and 'key up'; an unshaped output will not.

Key clicks are the result of 'shock excitation' of the receiver aerial system and associated tuned circuits. It is a proximity effect at the receiver and not a transmitter fault. An unshaped transmitter output may cause clicks only on near zone receivers and near zone receivers can experience click interference from a shaped high power transmitter output.

'Shock excitation' produces a damped oscillation in the receiving aerial system at its resonant frequency; the transmitter can be on a different frequency. The magnitude of the oscillation depends on the Q of the aerial circuits. High Q selective circuits produce the largest clicks.

As always, there has to be a compromise, transmitter output shaping is usually effective but it must not be overdone to the point where sidebands defeat the purpose and also limit the signalling speed. The signalling speed can be limited by overlapping of rise and decay time preventing resolution of 'mark' and 'space'.

If clicks are reported on your transmission, investigate the other person's receiver as it might have better selectivity than appliances with broadband front ends.

Radio telephone transmitters also have problems, not the least of which is the distracting noises which fill in the pauses in speech. The main cause is over enthusiastic use of speech processors.

Speech processors at the modulator input include a constant volume amplifier which 'compresses' loud passages and 'expands' low levels. It is a very successful method of maintaining a constant average modulation or sideband output when used in a very quiet studio-type environment, but a dismal failure if misused in noisy environments. Most amateur operating positions are noisy, even the average home ambient noise level is only 20 or 30 dB below normal conversational speech level. A compression of that order will amplify the ambient noise to equal the speech level if pauses are longer than the release time.

The noise in the cabin of a "bush-bashing" four-wheel drive vehicle is higher than normal speech and programs from that source sound like noise interrupted with speech. Another example of the misuse of compression is the transmissions from fishing trawlers on 4.535, 4.620 or 2.164 MHz; the wheel house of these vessels is usually directly above one or two diesels and the noise insulation is the thin steel deck. Trawler skippers have loud hoarse voices, because of that, and barely intelligible radio transmissions.

The remedy if there is a compression control, reduce it to 10 or 15 dB and experiment with the attack and release times or better still, switch it off.

This year, 1988, is the 40th anniversary of the Mathematical Theory of Communication devised by Claude Shannon and Topical Technicalities will celebrate at least one discussion paper about the subject.

Shannon's theory has had a profound effect on the development of communication systems but, is mostly ignored by amateurs. Many amateurs have never heard of Shannon and look disbelieving if told that his theory is probably more important to radio communication than others more familiar.

Shannon showed engineers how to defeat noise with signal encoding and how to achieve reliable communication with low error rates and at the same time minimise band width requirements. Pulse Code Modulation and the misnamed data communication systems would not have reached the present stage of development without Shannon's guiding principles.

There is scope for amateur experiments based on Shannon's philosophy and hopefully someone will accept the challenge before the 50th anniversary.

Possible projects are:

- a) develop a compression expander (compander) and digitised speech system for use in four-wheel drive mobile vehicles and trawlers.
- b) revise the Morse code and replace the present characters with others related more to their information value.

Most Morse characters use more bits than warranted by their information value. The letters Q and Y, for example, each have an information value of approximately seven bits, the code allocates 13 bits to each. The letter E has an information value of three bits, the code allocates only one bit.

Another anniversary which is worth remembering is that Kay Cottise completed the first ever 'alone around the world' by a lady on June 5, just three weeks short of the 90th anniversary of the first sail alone around the world completed by Captain Joshua Slocum, on June 27, 1898.

What a contrast in equipment. Kay could talk to home and friends almost any time; Captain Slocum mostly talked to himself. Kay could have left her chronometer and sextant at home — with modern radio navigation aids and satellites,

position fixing is a breeze. Slocum did leave his chronometer at home because he did not want to spend \$15 having it "cleaned and rated". He used a satellite to assist his navigation; Lunar observations and Lunar tables (not published now?) substituted for chronometer time. The only time-piece on the *Spray* was a battered tin alarm clock which, part way through the voyage, lost it's minute hand.

The difference in equipment used in those two voyages is a measure of 90 years advance in marine communication and navigation, advances due in no small measure to amateur yachtsmen and amateur radio operators. Topical Technicalities hopes to include information about the role of radio in amateurs yachting in later issues contributed by a radio amateur with special knowledge of the subject.

QRP HISTORY ARTICLE WANTED

The AR news desk recently received, from different sources, two historical snippets which might lead to an interesting article.

Firstly, an obituary on Loren Windom W8GZ (Silent Keys, AR magazine, June 1988), said that a world low power record was set in 1928. "Windy" Windom 8GZ, using a total input of 0.567 watt contacted Australian station 5BG.

Another reference to low power operation was also found in the souvenir program of the first Wireless and Electrical Exhibition and Convention, held by the WIA Victorian Division, in 1924.

The program said signals had been transmitted from Sydney to New Zealand with a power of 0.037 of a watt.

Is there someone among our readers who can supply details for an article on historical and/or modern low power QRP operation?

Material should be sent to the News Editor, Jim Union, Amateur Radio magazine, PO Box 300, Caulfield South, Vic. 3162.

BICENTENNIAL CALL BOOK ENTRIES

Those amateurs who wish to have their name and/or address deleted from details to be printed, are advised that they may make such a request in writing to the Federal Office, setting out what they wish to have suppressed. Any such requests must be received by the Federal Office on or before August 31, 1988. Write to: Call Book Details PO Box 300 Caulfield South, Vic. 3161.

RF IMPEDANCE MATCHING USING FERRITE TOROIDAL CORES

Stephen Bushell VK3HK
74 King Parade, Knoxfield, Vic 3180

Part 1: Transmission Line Transformers.

Possibly one of the least understood subjects in amateur radio is that of impedance matching. In this series of four articles various methods of impedance matching and transformation using ferrite toroidal cores as a medium will be discussed. There are many applications where impedances must be matched in order to obtain the best interstage energy transfer.

Recently, the writer was faced with the prospect of outlaying in excess of \$250 for coaxial cable with which to feed a two element Yagi. Not surprisingly, especially as the antenna was self-designed and constructed in order to save money, the cable was considered rather expensive!

After a few moments reflection, it was recalled how a similar feedline problem had been overcome when a colour television antenna was installed which the salesman had insisted would only operate from coaxial cable. Instead of the "required" coaxial cable, 300 ohm ribbon feeder had been used, attaching it to the antenna terminals marked 300 ohm (it seems strange that they should have these when you can only feed with coaxial cable!).

A store-bought balun was fitted at the television set to match the 300 ohm feeder to the 75 ohm coaxial input to the receiver.

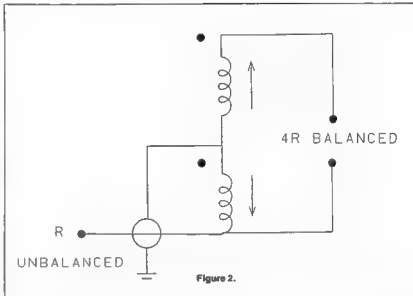


Figure 2.

Without doubt, this was the most inexpensive method of feeding the antenna.

On the home-brew antenna, a split dipole driven element would be used to take a balanced feedline. A balun would be required to match the

35 ohm driven element impedance to the 300 ohm feeder. Another balun would be necessary at the base of the feeder to match into the 75 ohm coaxial cable which contains the SWR/Power meter and feeds the transceiver (See

It was confidently anticipated that with only a small amount of judicious adjustment in lally to the element lengths, a relatively broadband beam would be achieved with a minimum of fuss and expense.

A pair of baluns, one 9:1 and the other 4:1, would be required.

Firstly, a closer look at these baluns. A balun is a matching device used to couple balanced and unbalanced circuits. In fact they are RF transformers which fit into one of the three following categories:

1. Transmission Line Transformers
2. Auto-transformers
3. Conventional Transformers

1. TRANSMISSION LINE TRANSFORMERS

In its classic balun-form, the transmission line transformer consists of two identical windings, a tap being placed at the centre junction giving a

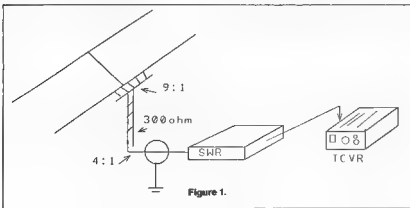


Figure 1.

4.1 impedance transformation from input to output. See Figure 2.

In this specific case, the distinguishing feature of the transmission line transformer is that the winding is composed of two conductors with equal and opposite currents flowing in each, as with conductors in a balanced transmission line. The net magnetizing force (ampere-turns) in the core is therefore theoretically nil. As a consequence, ferrite cores with a relatively small cross sectional area can remain unsaturated at relatively high power levels.

In a transmission line transformer the inductance is directly proportional to the permeability of the core material on which the transformer is wound. A high permeability material placed close to the external magnetic field thus magnifying the inductance appreciably. There is no influence on internal magnetic fields or the characteristic impedance of the transmission line. The power being transferred from input to output is not coupled through the ferrite material but rather through the dielectric medium separating the two conductors in the transmission line windings. See Figure 3.

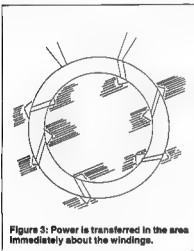


Figure 3: Power is transferred in the area immediately about the windings.

A major advantage resulting from the increased inductance provided by the ferrite core is the ability to operate over the range 1 to 30 MHz without having to resort to up to a quarter wavelength of wire for each winding which could be necessary in an air wound transmission line transformer. In practice, six to 10 turns wound onto a ferrite core are usually sufficient to provide the required transmission line simulation.

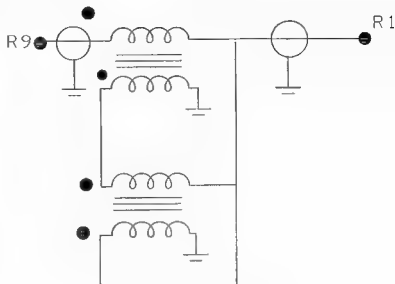
A true transmission line transformer can only have an impedance ratio equivalent to an integer greater than one squared: 4:1, 9:1 and 16:1 are the most common. To achieve these ratios it is necessary to combine various 4:1 structures on the same or separate cores. See Figure 4.

Now back to the task at hand — the two baluns required.

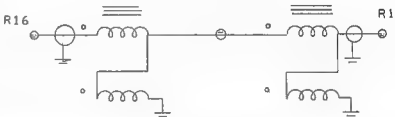
It can be seen from Figure 2 that the transformation from 300 ohm balanced twin feeder to 75 ohm unbalanced coaxial cable is covered (4:1) so that it leaves the 9:1 unit.

Unfortunately, the split dipole driver element presents a balanced load and the 300 ohm twin line is also balanced.

Figure 4.



(a) 9:1 unbalanced to unbalanced.



(b) 16:1 unbalanced to unbalanced.

Following on from the derivation of the word balun, ie balanced to unbalanced, a balbal would be required (balanced to balanced). Upon checking the usual sources of amateur information, no such word could be found. These devices do exist though as there are several at the writer's shack.

Due to phasing requirements however, a 9:1

balanced to balanced transition is unobtainable in simple transmission line transformers of the type discussed here.

Auto-transformers offer a simple solution to the balanced to balanced requirement and to a wide range of other problems.

This subject will be investigated in Part 2.

SOLAR CYCLE PEAK MAY BE EARLY

The peak of the next solar cycle may occur as early as late this year, being the most intense cycle ever measured according to Dr Patrick McIntosh, Director of Solar Physics Research at NOAA's Space Environment Laboratory in Boulder, Colorado.

Dr McIntosh's statements conflict with the prediction based on traditional methods of 1992 being the year of maxima. Nevertheless, the present rapid rise could flatten out, however NASA are apparently taking some precautionary measures with their low earth orbiting satellites, protecting them from the 'drag' that increases during periods of high solar activity.

—Adapted by Ken McClachlan VK3AH, from *AFRIS Newsletters* Vol 7, No 10 & 11

RENEWED YOUR STATION LICENCE?

The onus is clearly on radiocommunication licence holders to renew the licence when it falls due.

The Department of Transport and Communications send out renewal notices and if you value your call sign, prompt payment is recommended.

DOTC has told *Amateur Radio* magazine that there is the possibility under its computerised licence system for a call sign to be listed as having lapsed, if payment is not made.

This means the call sign then becomes available for re-issue.

One radio amateur recently heard his call sign on air, and found upon investigation he had failed to renew his licence.

FL-2100B and FL-2100Z WORKING WITH SOLID-STATE TRANSCEIVERS

Ron Mills VK5XW

13 Taylor Terrace, Rosslyn Park, SA. 5072

Following are one persons experiences with a problem that has always existed with the FL-2100 series linear amplifiers interfacing with solid-state transceivers.

These linear amplifiers present a mismatch to the transceiver resulting in a high SWR reading. In particular on the 21 to 28 MHz bands. This is very noticeable when the transceiver is working with the linear in the standby or off position. Typical SWR readings are 1.7:1 on 21 MHz and 2.5:1 on 28 MHz (Lower bands are only marginally affected). This unwanted SWR causes the solid-state transceiver to reduce output power by as much as 20 percent on 28 MHz. The FL-2100 series was not designed for solid-state operation but for transceivers with valve outputs such as the FT-101, etc. where any mismatch caused by the insertion of the linear into the circuit is better tolerated.

When the FL-2100B is in the OFF position, the RF from the transceiver goes from the "RF IN" SO-239 socket via a change-over relay, to an old style SWR bridge then to the "RF OUT" SO-239 socket. All of this wiring is done with heavy silver-plated wire. Numerous ways were tried to reduce the mismatch and the only success achieved was to remove the wire from the relay to the SWR bridge and route it directly to the "RF OUT" socket. This brought the SWR on both 21 and 28 MHz to around 1.3:1, but made the SWR bridge inoperative. The SWR problem could be overcome somewhat with the linear operating by retuning the input circuits for each band. (This is only possible on the FL-2100B and the FL-2100Z (pre-WARC band model). The FL-2000 does not have tuned input circuits.

In December 1986 an article appeared in a local radio magazine regarding this problem in the FL-2100 (models not specified). The author claimed that by replacing the silver-plated wire with coaxial cable the problem had been solved. Thinking something must have been overlooked in my original attempts I retraced my steps gradually replacing the SWR bridge and the wiring with coaxial cable only to find it made no difference to the FL-2100B. The coaxial cable was then taken out and the original wiring replaced, again bypassing the built-in SWR bridge. Things were left like this until a FL-2100Z, with WARC bands fitted, was purchased.

I am now using an IC-751 which has its own built-in SWR bridge. As the same high SWR was being encountered with the FL-2100Z, a search began again in an attempt to get rid of the mismatch as much as possible, as the majority of operating at this QTH is barefoot and the linear is sitting inoperative in-series with the IC-751.

The IC-751 was connected, via a short length of RG-213U coaxial cable, to the FL-2100Z, then via the same type of cable to a Welz CT-300 dummy load. The SWR read on the IC-751 was again around 1.7:1 on 21 MHz and 2.5:1 on 28 MHz.

Imagine my surprise when I removed the bottom from the FL-2100Z. There were now two relays in the input/output circuit. The first relay from the input SO-239 socket was a small one and the one that takes the full output power with the linear operating was the same large type used in the FL-2100B and the non-WARC FL-2100Z (the non-WARC Z model still only uses the one relay). The SWR bridge in both models were now using a compact toroid type SWR bridge mounted right at the output SO-239 socket. What made things even more interesting was the fact that all of the RF wiring was done in coaxial cable (so much for the theory of replacing the wiring with coaxial cable).

The large output relay has two change-over sets of contacts. By using the second smaller input relay, one set of contacts became vacant on the output relay. These contacts were then paralleled with heavy gauge tinned copper wire to those in use and immediately the SWR dropped to around half the original readings. The coaxial cable used for the input circuits, ie from the "RF IN" SO-239 to the small relay and from the small relay to the large output relay change-over contact was quite small in diameter. This small cable also went from the non-operated change-over contact of the small relay to the input circuits of the linear proper — incidentally, the input circuits for each band on the Z model are non-tunable — the non-WARC Zs are tunable.

An attempt to replace this thin coax with the same length of RG-58 C/U gave exactly the same SWR. On impulse the original thin coax was paralleled with the length of RG-58 C/U. The SWR went down. The coax was then paralleled from the small relay to the output relay with RG-58 C/U of the same length. The SWR had now dropped to 1:1 on both 21 and 28 MHz. I have no explanation why this paralleling of the two coaxial cables of nominal 50 ohms each finally removed the mismatch in combination with the paralleling of the relay contacts, however, it works! This has been verified by two other amateurs who replicated the above with similar results.

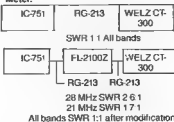
An interesting side effect of these modifications relate to the FL-2100Z built-in SWR meter. As delivered, the SWR meter would not move off zero unless there was a very large mismatch in the antenna system. After the alterations, it operated as it should! This was also verified in the other two FL-2100Zs modified.

Hopefully the above may prove useful to other amateurs who do not like losing power with their solid-state transceivers due to the impedance mismatch of the FL-2100Z.

Do not forget that there are very lethal voltages inside the linear when on (standby and operating) so ensure that the linear is unplugged from the mains power when doing any work on it.

I have shifted the voltage tap on the power transformer from 850 volts to 820 volts. This reduces the output voltage from 2400 volts to 1800 volts. PEP of 400 watts is still easily available with reduced stress on the 572B valves and there is less likelihood of any flash-over due to antenna mismatch during tuning.

Figure 1: Test Set-up using the IC-751 SWR Meter.



MEASUREMENT OF INPUT / OUTPUT IMPEDANCE

Ken Kimberley VK2PY

21 Nicoll Street, Roselands, NSW 2196

A short article describing a method used by the author to determine both the input and output impedance of several instruments under development.

These projects include an analogue frequency meter, a high power square wave/sweep generator, and a frequency multiplier for audio generators. In due course, each will be presented in AR. The time scale depends upon how much energy and enthusiasm for writing can be drummed up now that 10 metres is coming good for DX!

The method of measurement now about to be presented is quite simple, non mathematical and is repeatable.

1. INPUT IMPEDANCE

Often a piece of equipment is built or purchased secondhand and, as usual, the handbook is missing, or is otherwise unavailable.

As we all know, both input and output of equipment should be terminated with their respective impedance. This condition gives optimum performance, ie lowest VSWR, maximum power transfer, correct attenuator calibration, etc.

Now, having gone through the preamble, let's see how the above mentioned parameters may be determined. For the purpose of a simple explanation, consider the case of an old amplifier purchased at the local flea market. It is intended to use this in conjunction with an existing record player. The player has a ceramic cartridge which requires a load impedance of around 2 Mohms. Both output and frequency response will suffer if the cartridge doesn't see this load.

The following equipment will be required:

1. Source oscillator with, preferably, a low impedance output.

2. If this impedance is higher than, say, 10 ohms a suitable step down transformer should be used.

3. A calibrated "Resistance Decade Box" or, at a pinch, an ordinary carbon potentiometer (RV).

4. An output measuring device, such as a level meter, CRO, receiver, etc.

PROCEDURE

Connect as in Figure 1, set RV to minimum and switch all equipment on. After a suitable stabilising time, set the source level so that the output level is exactly FSD or any other well defined point. Care must be exercised to avoid overload the amplifier under test (AUT) otherwise misleading results will be obtained.

Next, gradually increase RV, being careful to maintain all other conditions constant. Continue until the output has decreased to half (-6 dB).

At this point the resistance of RV plus the source R (RS) is exactly equal to the input of the AUT. Since the effective impedance of the source/step down transformer combination should be very low it may, for practical purposes, be neglected in most cases (inputs 600 ohms and up).

If a carbon potentiometer was used it will be necessary to measure the adjusted value with the station ohmmeter.

2. OUTPUT IMPEDANCE

Output impedance is measured in a similar manner. Suppose that an oscillator with unknown output characteristics has been obtained or built and it is necessary to determine the impedance for matching purposes.

Proceed as follows.

Referring to Figure 2, connect the level meter, etc, across the output terminals, which at this stage should be unloaded. Switch on and then adjust its attenuator for a full scale level reading (as per input measurement).

Next, load the oscillator using RV1. Adjust same until a level reduction of 6 dB is obtained. At this point the value of RV will be equal to output impedance (Z).

LIFE IS NOT EASY

Now that was really simple, wasn't it? However, there are certain constraints to consider when using the above technique.

These problems are the ever present hidden parameters of stray reactance, consisting of capacitance and inductance, which will influence the results as frequency and impedance is increased.

Let's consider the use of a decade box. These usually have wire wound resistors in the lower value decades and metal film, etc, in the higher. Despite efforts to eliminate the inductive effect sufficient remains to cause problems. The stray "C" of a standard five decade is usually in the order of 30 pF.

Hence, it is prudent to restrict the decade box to measurements below about 100 kHz. A carbon potentiometer will be useful up to around 20 MHz, especially with impedances below 1 kohm. With care, it is possible to extend the upper frequency limit of this technique by substituting single resistors for RV until a match is obtained.

Another problem which arises, especially when measuring output impedance, is power dissipation. Imagine feeding your "Super Dooper" 100 watt audio amplifier into an ordinary carbon potentiometer. It wouldn't last a second. Wire wound resistors are the order of the day here. Also, some power amplifiers do not take too kindly to working into an open circuit. Here it will be necessary to pre-load the "AUT" with a suitable resistor, say R2.

The resultant test figure, so obtained, will be the combined parallel value of $Z + R2$. Knowing R2 and $Z + R2$ makes it a simple matter to calculate Z.

Thanks to Mrs B Brown, of Burnell Lake, for typing the manuscript.

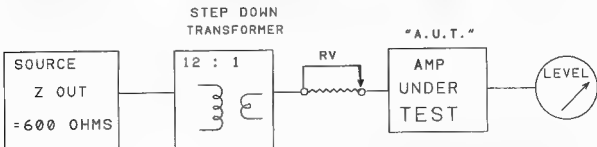


Figure 1: Test Set-up — input "Z" Measurement.

NOTE: 12:1 Step Down Transformer is optional. If deleted, then source Z must be added to result.

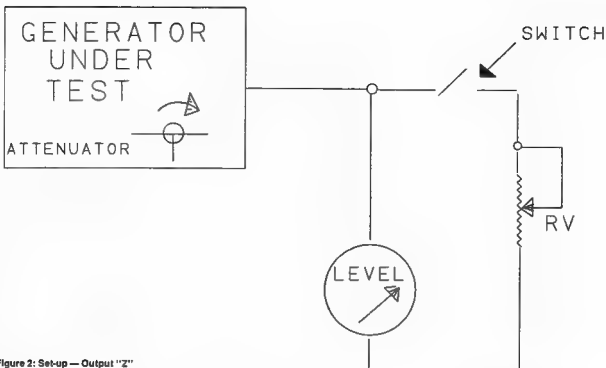


Figure 2: Set-up — Output "Z" Measurement.

ODDS AND ENDS

THE SHIRT THAT WORKS

How to recruit WIA members without really trying! The WIA New South Wales Division Administrative Secretary, Maureen Lavery, has signed up new members she has attracted to the Institute simply by wearing a WIA leisure shirt.

Maureen says the shirt has helped her recruit four members in the past 18 months. People look at the shirt and ask "what is the Wireless Institute?", she says.

"I was in my local post office and a lady asked about the shirt, and then told me her husband was interested in amateur radio and did not even know such a thing (the WIA) existed," Maureen says.

The next day Maureen gave the lady some WIA Public Relations material and a membership application form, resulting in her husband becoming a new member.

The message illustrated by Maureen's efforts is that it pays to advertise.

SIGN OF THE TIMES

The South East Queensland Teletype Group (SEQTG) has ceased to exist, but has been superseded by QARDATA Incorporated.

The Queensland Amateur Radio Data and Teletype Association held its inaugural meeting after the final AGM of SEQTG was closed on March 4, 1988.

The postal address for QARDATA is PO Box 184, Fortitude Valley, Qld. 4006.

SITUATION VACANT

WANTED: Newshounds for the WIA journal, *Amateur Radio* magazine. The only requirement is a news-sense — an easily acquired skill. A definition of "news" is something that is new and of interest to someone else.

In the diverse hobby of amateur radio, things are happening all the time which could, if put down on paper, make interesting reading. Even just a news tip-off or an accurate snippet could lead to a worthwhile article.

Just spend a minute and give thought to whether you know of some news. Is your radio club or group doing something you think would be of interest to others — then submit an article.

If you see something printed about our hobby in a newspaper or elsewhere — take a clipping and put it in the post without delay. Remember to mark the clipping with the name of the newspaper or publication, and the date it appeared.

News offerings from amateur radio equipment suppliers and retailers about new products and industry developments are also most welcome.

ADDITIONS & DELETIONS

The ARRL has added Western Sahara (S0) to its DXCC countries list. However, it has decided that Western Sahara is a re-activation of Rio de Oro (Spanish Sahara, EA9) so Rio de Oro has been deleted from the list and S0RASD operations are now creditable for DXCC as Western Sahara.

PRESSURE ON 80 METRES

Italian radio amateurs have recently been given some bad news that their primary status on 80 metres has been downgraded to secondary service status.

The allocation covers 3.5 to 3.8 MHz. The Italian Government is reviewing all frequency allocations below 27.5 MHz in conjunction with the Italian Ministry of Defence.

FRENCH ON SIX METRES

France has made some permits available to its radio amateurs so they may operate under restrictive conditions on 50 to 51 MHz.

Power levels are very small but allow experimentation from fixed stations using CW, SSB, RTTY and Packet.

Like Australia, France has television broadcast stations using the band. Under the permit system, radio amateurs at a distance of 150 kilometres from such a television transmitter are permitted three watts ERP, extending to 10 watts at a distance of 200 kilometres.

France became the third European country behind Britain and The Netherlands to attain access on six metres.

BBC HZ OUTLET

Discussions have been held between the BBC and Radio New Zealand about the possibility of the BBC having a relay station in New Zealand.

If this proposal went ahead it would give the BBC World Service a powerful signal into the South Pacific.

From the Westlakes Amateur Radio Club newsletter

ROYAL AUSTRALIAN AIR FORCE EX- SIGNALS GROUP

Peter Alexander VK2PA

"Nandan", Rollends Plains, via Telegraph Point,
NSW 2441

The Royal Australian Air Force ex-Signals Group, was formed shortly after the end of World War II and consists of any ex-Airforce signals members who were trained in the art of using Morse code amongst other skills for communication.

THE MEN CAME from all walks of life and on 'joining up' soon mastered the art of CW. The W/T operators air (a r crew) pass-out speed was 20 to 25 words per minute, and after eight months of intensive technical training at Ultimo or West Melbourne Technical College, and then further technical training and flying at Point Cook Signals School, were posted to various squadrons, units and operational bases throughout the theatre of war including the Middle East, United Kingdom, and Papua New Guinea. Many held their amateur certificates of proficiency and, in fact, it was the amateurs that formed the bulk of the RAAF Signals Reserve prior to 1939 and the backbone of RAAF Signals.

The duties of the wireless operator were many and varied, providing communication where required, as air crew and on the ground. They were transmitting station technicians, signals office operators, W/T operators on the crash and air/sea rescue boats with the Marine sections, HF/DF (directional finding) operators, and they maintained and repaired equipment.



The ornate Signals Banner was handmade and embroidered by Olive Macey, sister of the late Lem Macey, who was better known for his activities as a Wireless Operator with Antarctic Expeditions during five tours-of-duty. Lem was awarded the Polar Star Medal and his son still attends the reunions proudly wearing his Father's medals in remembrance.

With the diversity of the requirements and duties of a wireless operator after four or five years service, it is not uncommon to note that most served on at least a dozen different units and squadrons.

The straight telegraphist and wireless a.r. gunners also played an important role, not so technically trained, but nevertheless good Morse operators and highly skilled in their field.

Those who were made instructors, also played an important part in training the increasing intake of wireless operator trainees.

President of the Air Force Signals Group,
John Williams, at the 1988 Reunion





This Morse Key is similar to those used at the Signals School, Point Cook, Victoria, by Trainee Air Wireless Operators from 1940 onwards. It was fully restored to better than its original condition by Alan Appleby VK2BF. It was mounted on an extended block, and an inscribed presentation plate fixed to one side. The presentation is being performed by Alan VK2BF on behalf of the Signals Group to Snow Hodder VK2DV, a foundation member and president from 1950 to 1985, in recognition of his service.

Many, of course, did not survive to see peace, and since many more have passed on.

It is a long time ago now, but we still march on April 25, in commemoration.

The accompanying photographs were taken at the 1988 RAAF Signals Reunion on April 25, at Sydney. Photographs are courtesy Pete Alexander VK2PA.

Those who may be interested in learning more of the history of RAAF Signals, *The Saga of Achievement* by Bonn Hall is well worth reading.

PER ARDUA-AD ASTRA



Left:

Raising their glasses in a toast to the 1988 Reunion — ex-W/T Operator Keith Scott, Gerald Sabin VK2AGS and Alf Wess VK2AHW.

Below:

Three old Brass Pounders — Jim Carr VK2JV, Gordon Lanyon VK2AGL and Pete Alexander VK2PA.



QSP

MORE ABOUT THE VK6NNN TRANSMITTERS

A letter has been received from Peter Parker VK6BWI (ex-VK6NNN Congratulations Peter!) to tie up a few loose ends regarding the two almost identical circuits on pages 29 and 37 of March AR, and referred to in the "Murphy Department" on page 40 of June. He recommends that HT not more than 200 volts be used with the 6GV8. Unfortunately the circuit showing a 200 volt supply, which should have been the only one published, was the one which had an error elsewhere! Some readers have queried the wisdom of keying the oscillator, but Peter claims reports have stated his keying to be "as good as commercial equipment".

—AX3ABP

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Book Review



RADIO THEORY HANDBOOK FOR AMATEUR OPERATORS

Jim Linton VK3PC

4 Ansett Crescent, Forrest Hill, Vic. 3131

RADIO THEORY HANDBOOK — for — AMATEUR OPERATORS

FRED SWAINSTON

quance, successfully used by the WIA Victorian Division class instructors

Chapter 1 "Matter and Electricity" is an explanatory introduction to the basic concepts, some fundamental theories, rules and laws of physics which are important in understanding radio theory

The following chapters cover DX Circuits, Cells and Batteries, Magnetism and Electromagnetic Induction, Capacitors, AC Theory, Vacuum Tube Theory, DC Measurements, Semiconductors, Amplifiers, Oscillators, Continuous Wave Transmitters, Amplitude Modulation, Microphones and Speakers, Receivers, Single Sideband, Frequency Modulation, Power Supplies, Interference, Transmission Lines, Antennas, Propagation, Test Equipment, Specialised Techniques, Safety and Mathematics

The final and 26th chapter on mathematics is well presented and worth the handbook's cover price alone for those rusty or seemingly hopeless with figures.

Fred firmly believes the teaching of vacuum tube theory is important and this view is reflected in the handbook

"If a lay person is studying the concepts of amplification, it is easier for them to first grasp the idea of electronics flowing through a vacuum, and then relate that to electron flow in solid state material," he explained

The specialised techniques chapter gives an overview sufficient for the examinations, but is not intended to be an in-depth text on the advanced modes and techniques that can be used by radio amateurs

Each chapter is clearly written, printed on good paper with an easy-to-read type-face, and excellently illustrated

At the end of each chapter there is a set of multiple-choice questions to help test the reader's grasp of the theory. The correct answers are supplied in the back of the book. A series of trial theory examinations for both the Novice and AOCOP as also included

The book has a list of contents and is well indexed at the back in normal text book fashion

But, a revolutionary additional feature is reproduction of the DOTC Novice and AOCOP Theory Syllabuses, with each syllabus topic cross-referenced to the handbook text. This provides the theory student with the ability to find text on any syllabus topic. The cross-referencing of syllabus is excellent in helping those needing to strengthen any theory knowledge weaknesses shown up by attempting the actual examination papers

The copy supplied by the publishers Prentice Hall of Australia Pty Ltd, came with an erratum stating that a mains filter diagram on page 218 was incorrect. This concerns erroneously marked polarity on mains terminals

This 345 page handbook is an excellent text for those who have no knowledge of radio and electronics theory. It is also a handy reference for those who have already passed their amateur examinations or are working in the electronics industry

The Radio Theory Handbook for Amateur Operators by Fred Swainston is now available from the WIA Victorian Division Bookshop for \$38.00 each including postage to anywhere in Australia.

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GRH/T Ground independent 3dB S/Steel whip	\$51.82

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M40 Brown Fibreglass collinear 4.5dB	\$17.86
OW450 "On-Glass" 3dB kit	\$160.48

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AMATEUR BANDS BEACONS

FREQUENCY	CALL SIGN	LOCATION
50 005	HA4MIR	Honara
50 025	2S2UX	South Africa
50 011	JZ1GIV	Mie
50 020	JE2JIN	Japan
50 028	JATZMA	Fukuoka City
50 075	V680X	Hong Kong
51 020	ZL1UHF	Auckland
52 013	P206PL	Port Moresby
52 000	ZK23X	Nile
52 200	VK5VF	Darwin
52 250	ZL2VHM	Manawatu
52 320	VK6RT	Wickham
52 325	VK2RNV	Newcastle
52 330	VK3RG	Geelong
52 345	VK4BP	Longreach
52 350	VK4RT	Kalbarrie
52 370	VK7ST	Hobart
52 420	VK2RSY	Sydney
52 425	VK2RDS	Gunnedah
52 435	VK3RMV	Hamilton
52 440	VK4RTL	Townsville
52 445	VK4RIK	Cairns
52 450	VK5VF	Mount Lofty
52 460	VK5PMP	Perth
52 465	VK6RTW	Albany
52 470	VK7RNT	Launceston
52 485	VK4RAS	Alce Springs
52 510	ZL2MH	Mount Cliché
144 022	VK6RB	Busselton
144 400	VK4RT	Mount Melbourne
144 410	VK7RDS	Canberra
144 420	VK2RSY	Sydney
144 430	VK6RTG	Glen Waverley
144 445	VK4RIK	Cairns
144 445	VK4RTL	Townsville
144 455	VK6RTW	Albany
144 470	VK7RMC	Launceston
144 480	VK5VF	Darwin
144 485	VK4RAS	Alce Springs
144 550	VK5RSE	Mount Gambier
144 565	VK4RPB	Port Hedland
144 600	VK6RT	Wickham
144 600	VK5VF	Mount Lofty
144 900	VK2RCW	Sydney
144 950	VK3RCW	Melbourne
145 300	VK6PPI	Perth
432 060	VK6RDS	Busselton
432 150	VK6PPI	Nedlands
432 410	VK1RBC	Canberra
432 420	VK2RSY	Sydney
432 440	VK4RSD	Brisbane
432 445	VK4RIK	Cairns
432 445	VK4RTL	Townsville
432 450	VK4RIK	Cairns
432 540	VK4RAR	Rockhampton
1296 198	VK6RDS	Busselton
1296 420	VK2RSY	Sydney
1296 440	VK4RSD	Brisbane
1296 445	VK4RIK	Cairns
1296 480	VK6PPI	Nedlands
2204 450	VK4RSD	Brisbane
2204 450	VK4RSD	Brisbane
10445 000	VK4RIK	Cairns

Mark VK5AVQ (ex-VK0AQ), advises the VK0MA beacon has ceased operation due to his departure from Mawson. At the moment there appears to be no one at Mawson interested in keeping the beacon operational.

1 John Martin VK3ZJC, reports the VK3RCW beacon uses AFSK (ie FM carrier with a keyed audio tone), not FSK as earlier reported. The antenna is vertically polarised. Despite this it is heard more often than VK3RTG in VK5.

After struggling for months to obtain the information, the present beacon list is almost complete. The only beacons about which I lack information are VK6RTU at Kalgoorlie on 52.350, and VK6RPB at Port Hedland, on 144.565 MHz. Even lacking definite information on these two beacons, the present list should now be the most accurate list available and should be noted by FTAC.

I note, with some concern, the new Packet Radio allocation of 144.800 to 144.900 MHz, and the problem it is already causing in VK3 with the reception of VK5VF, the two metre beacon on 144.800 MHz. It would seem more logical to include the allocation in the space above 145 MHz.

It will be said, of course, that VK5VF is not on its primary frequency allocation of 144.450 MHz. Through these columns I have outlined the reasons on at least two occasions, but it may be necessary to do so once again.

VK5VF operates from a very prime position on Mount Lofty near the Channel 7 television tower and has been located there for around 20 years. Because of the intervention of the Mount Lofty Ranges there are few locations in line with Adelaide and VK3 (in particular) that are suitable for the siting of a beacon. The present site serves the eastern States and VK5 (Albany, in particular) very well indeed and many contacts have been initiated as a result of hearing VK5VF.

Unfortunately, this same prime sitting is not helpful to certain areas of the Adelaide metropolitan area when contacts are attempted in reverse as the reception of stations in Victoria, in particular, are made with antennas pointing straight at the beacon antennas, with the latter providing an 89 + dB signal in the better areas. A signal of this magnitude causes all manner of problems for weak signal reception, from front-end overload to cross-modulation with its associated side effects. Relative harmony has been achieved so far by keeping the beacon higher in the band than its preferred frequency. Some years ago tests on 144.450 MHz indicated just how bad the problem could be. I am not sure that the position has changed.

When I last wrote about the problem, I received letters from interstate which said the writers had similar problems with beacons in the local area but had been able to overcome the disturbances by various means. Although some of the writers were, in fact, very close to the beacons and were not being worried by them unless they tuned very close to the beacon frequency, around the prime 144.100 MHz area, they had little or no interference. However, as far as could be ascertained, none of these people actually had to fire right through the beacon antenna when receiving weak signals around the calling frequency. That is the crux of the problem in Adelaide.

What can be done about the matter at this stage I am not sure. I suspect the users of the packet radio have no need to use the beacon for their purpose. Because of this lack of need they are most likely unaware of the existence of VK5VF. If they were aware of its existence, and I am sure some would have known, then it may have been courteous to have ascertained the position from South Australia before going ahead with the establishment of a band segment (and/or frequency) to the detriment of a long standing user of that portion of the spectrum. May the Flaw now fly!

MELBOURNE ON TWO METRES

In response to the comments of Gordon VK3CX, in May AR regarding the low level of activity on the low end of two metres in Melbourne, John

VK3ZJC, says in a letter "I can't understand how anyone can say two metres isn't active! Regular stations are VK3UM, NM ALZ, APW AQU, AUG, AUU, BBB, KXZ, XYS, YTV, ZAT, ZBJ, ZGJ, ZJC, and others I've forgotten to mention. On weekend mornings, 144.200 and 432 200 MHz are active with a craft reflection contacts to VK1 and 2. On Saturday morning, 28/5 there were 12 stations active in VK1, 2 and 3 on two metres — a real dogpile!"

It is encouraging to know such activity exists. I wonder what total activity can be found in the other capital cities? It seems the aircraft enhancement contacts initiated by Doug VK3UM and Gordon VK2ZAB have acted as a catalyst in the promotion of weekend activity, at least. Is anyone prepared to put pen to paper for the other capitals stat the position please?

John VK3ZJC also raises the matter of band planning, pointing out some problems which have been appearing on two metres, eg packet radio on beacon frequencies, calling frequencies, voice repeaters, and FM nets on beacon frequencies and in the satellite segment. He queries whether part of the problem is that band plans need more and frequent publicity and could be the subject of a special article in AR.

Other points to be raised by John are he has now worked Gordon VK2ZAB, via aircraft enhancement four times on 432 MHz follow ng next in line after Doug VK3UM. Others on 144 and 432 aircraft enhancement include VK3S BG, VP, BU, AU, and has heard VK2VDZ and VK2ZRE. On 28.5 excellent signals from VK5NY. On 81 worked VK5S LP, ZDR and ACY on 144 and 432, but finding 432 signals better than on 144 MHz.

On 1296 MHz, Lionel VK3NM should be added to the earlier list. He runs one watt on SSB/FM and has worked into VK7. Aris VK3AMZ is building equipment for 1296. Dick VK2BDN, is also on 1296 MHz.

Roger VK3XRS, at a very good station 160 metres above sea level, at Barnsdale sends excellent signals to Melbourne on 144 and 432, and is working on a dish for 1296 MHz. He has just increased power from 10 watts to 100 watts on two metres and has acquired a monster Yagi from David VK3AJU.

David VK3AJU, is still the most active two metre operator in Victoria. He is now able to work Gordon VK2ZAB, virtually whenever he likes — so much for line of sight! It is understood he has worked nine countries on EME and has recently received a high power permit! Doug VK3UM has been quiet lately but could be back on 432 soon. Mike VK3APW, has 400 watts on two metres and has just put up a bay of four long Yags.

VK3ZJC is also attempting an aircraft enhancement contacts on 1296 and sending automated CW calls in the Canberra and Sydney directions every Saturday and Sunday morning from 2215 to 2315 UTC. Frequency 1296 100 cycle 15 seconds transmission "VVVV de VK3ZJC VK3ZJC" and then 15 seconds receive. Two stations are listening so far, Eddie VK1VP in Canberra, and Dick VK2BDN in Sydney. Eddie is willing to go portable to make a contact as his aircraft window to Melbourne is blocked by Black Mountain.

Thanks for the newsy letter John — bits and pieces like this cover a lot of territory on the bands and helps to keep other abreast of VHF/UHF happenings.

THE SOLOMON ISLANDS

John VK4PU, advises that, from June 5 1988, for

three months, the amateurs at Honiara will be permitted to use the prefix H44X to commemorate and celebrate their 10 years of independence. Special cards will be printed and made available to those fortunate enough to make QSOs. This information originated from Greg H44GP.

SOUTH EAST RADIO GROUP (SERG)

The 24th Annual SERG Convention took place over the Queen's Birthday holiday weekend in cool but fairly reasonable weather considering Mount Gambier's position on the Continent. There was a good representation from VKs and VK3 with the usual very strong attendance from the North East Radio Group (NERG). I also believe VK6 and VK7 were also represented.

Part of Saturday afternoon and evening and most of Sunday was spent tracking down hidden transmitters, fox hunts, scrambles, etc on both the VHF and HF bands. There are some very keen enthusiasts who enter almost everything provided to test their skills. The outright winner of the SERG trophy was Geoff Hudson VK3GQH, of NERG.

Other activities included many trade displays entering much mouth-watering equipment, second-hand equipment sales, a display of microwave technology by Cess VK5ZD, who had also gone to the trouble of preparing a video depicting the art of microwave cooking, a continuing demonstration of packet radio, a full size HF antenna display.

Ivan VK5QV, throughout the day gave a rather awe-inspiring demonstration of the potential of the Tesla Coil, earlier versions of which had been used for spark transmission. He was able to draw a continuous arc for more than 30 centimetres. Bill Verall VK5WV and Eric Jamieson VK5LP together mounted an antique radio display which created considerable interest, particularly as the old wireless sets presented were put-through their paces to the delight of the audience.

The home-brew section attracted eight entries and Eric VK5LP decided the winners were Trevor VK5NC for his 230V and 1296 MHz power amplifiers featuring water cooling of 2C39 valves, and Bob VK3BV for his 160 metre linear amplifier and antenna tuner. Later in the evening, Eric issued a challenge to the fraternity to construct a two valve AG parallel broadcast receiver based on the Renartz design and provided a circuit diagram and certain other parameters which would need to be followed the finished product to be tabulated for testing at the 25th Anniversary Convention in 1989. First and second prizes were offered. Eric said he would construct one which would be used as the standard of comparison and expected that, from amongst those which may turn up, there would be some which performed better and others which did not. He saw the competition as a challenge not only to the older amateur but the younger people and said they did not have to be operating amateurs, SWLs and the like would be equally welcome to enter.



All the 30 or so copies of the circuit which were provided were taken. If only half return active models it will be an interesting exercise. Any readers of the column who would like to try their hand at the construction of a relatively "simple" receiver (but which has its peculiarities, I can assure you) and can bring it to the 1989 SERG Convention, may obtain a circuit and details from me by sending a SASE. It is a fun thing after all but one which will no doubt create a lot of interest. If constructed properly there is no reason why the radio cannot be used around the home afterwards as it will have loudspeaker output.

The SERG officers had provided the usual excellent trophies with the NERG people receiving the bulk. Following these presentations, the President, Trevor Niven VK5NC, called upon Brenda VK3KT, who represented the Federal Executive of the WIA, to speak, and she called Eric VK5LP to the rostrum to receive the certificate for the recently awarded Ron Wilkinson Achievement Award. In responding, Eric said he was proud to receive such an award and hoped that, had Ron Wilkinson been here, he would have approved of him as a recipient.

Following that presentation, Eric was rather stunned to be called again and Trevor VK5NC presented him with the award of the first Life Member of the South East Radio Group, in recognition of many years of support for the Group's activities. It is not often Eric is stuck for words, but he seemed to be at this point, but was able to say that for this award, he was proud to be a recipient, and would continue to give as much support as possible to SERG, as he believed the Group was truly helping to promote the spirit of amateur friendliness and co-operation. The fact that so many amateurs and friends turned up year after year indicated they were on the right track.

The evening concluded with the usual great SERG evening meal provided by the ladies of the Group and their helpers, a very fitting wind-up to a great weekend.

FROM NEW CALEDONIA

A letter from Philip FK1TS, is, as usual, full of information which is now to be passed on to

Philip is constructing a six metre beacon and this should be operational by the time you read this, it will run 10 watts to a Swiss Quad antenna beaming east-west. He says he is more inclined to go for a vertical collinear of some description but will have to be content with what is on hand for a start.

Philip's latest plans for DXpeditions are confirmed as late August/early September, to SW1 (West Samoa) and KH6 (American Samoa). He will be operating as 3D2TS from Fiji for most of September. In late September and most of October as ZK1?? from Cook Island. If he has good propagation from there to JA, he plans to fly to the North Cook Islands, which is a separate DXCC country. He plans to have some "nice" cards printed in Fiji.

Philip will be using VK and ZL television as indicators of band openings and, as quite a deal of his time away will be during the equinox, he is hopeful of F2 openings to VK, ZL, JA and many Pacific areas. Although Philip has not indicated frequencies, past experience tells me he will be operating around 50.110 and 52.050 MHz, although if 50.110 becomes busy he will be on 50.120. He has found signals are consistently better on 50.120 than 52.050 MHz, and the openings last for longer periods. In support of this he mentions working VK2VJ at 0539 and VK2FLI at 0546 on 19.5 to 50.120 MHz when signals remained 5x9 + 20 dB with 50 much better than 52 MHz. He also worked VK2XJ at 0510 on 19.5 and again at 0511 on 19.5 to 52 MHz.

ADVICE FROM JAPAN

The letter from Philip FK1TS, also included a copy of a letter from Nori JH1CQA, which should be required reading for six metre DX operators.

Nori sends details of the JA7ZMA beacon on

50.028 MHz (shortly to shift to 50.027 MHz) which runs 10 watts output from a TR-9300 to a six element Yagi at 15 metres and beaming south. Operating time is da y from 2200 to 1100 UTC, but sometimes extending to 1500. The beacon is located at Fukushima City, about 250 kilometres NNE of Tokyo in the shack of JH7DHS and with Gnd Locator QM07 JH7DHA said they hoped to transfer to a neighbouring mountain soon to allow the beacon to operate 24 hours. For further details and reception reports to Kinya Honda JH7DHS, 110 Yoshikuranagura, Fukushima City, 980, Japan.

The following information is as contained in the letter.

AL7C in Anchorage, Alaska, worked JA1, JA2 at 0540 on 31.5 to 50.110 MHz. The AL7C signal was very weak with heavy QSB and believed to be Es multi-hop path.

The SN8BTJ expedition by JAs opened 14 and 15.5 from 0300 to 0500 on 52.125 MHz with very strong signals.

Nori believes the VS6SX beacon may be off the air as he has not heard it during several strong VS6 openings during April and May. VS6E, XLT, XRC and XWR are all active on six metres.

BY1PK, BY4AA and BY4RB are all active from China on six metres.

JH7EAYUD1 is on six metres now. The JD1YVA beacon on 50.110 is now off the air (This was already known 5LP).

K8D8S is an active six metre station, also HLs IE, JUD, 1AAY, 5BNJ, 5BNJ and 9TM.

Nori also mentions the SV1ES expedition for June 3 to 12, by JAs to Singapore and this was the first occasion there had been any six metre operation from that island. Also, the VK4KCV VK9K by SV1ES expedition team June 17 to 24. Both of these have passed by the time you read this.

JE3MAS is planning to operate as SH1HK from Zanzibar Island, Tanzania on six metres. The beacon generator is being produced by Nori and JG1ZGW. At the moment the beacon frequency is unknown but the licence to operate has been approved.

Thanks to Nori JH1CQA and JG1ZGW, for alerting us to the above six metre news.

SOUTH AFRICA

Hal Lund ZS6BV, advises that the April report of "The 50 MHz Reporting Club" from Ray Cracknell G2AHU, says, "Rising sunspot numbers have led to extensions of the TEP zones. Whereas in October 1987 the southern limit was roughly the Tropic of Capricorn, by March 1988, stations as far south as Pretoria were working on southern European 50 MHz maximum stations as far apart as all but the southern tip of Africa and the southern (7) half of the British Isles should be able to contact each other on 50 MHz provided the maximum sunspot activity rises to the same levels as 1979/80."

As I pointed out last month, Cape Town is about the same latitude as Adelaide and Pretoria, the same as Melbourne and Queensland, which is roughly 300 kilometres south of the Tropic of Capricorn. It will not be hard for anyone to interpolate the South African situation to that of Australia. Thus, with more southern European countries allowed six metres, it is new time they will work that the same stations as far apart as SV0FE and SV1DO in Athens, Greece, have been granted two year permits for six metres. The former station is M4e, who, as an American living in Greece, was a very active VHFer in the US.

All this leads up to saying that, with the M2 period coming in September and October, stations in VK6 particularly should spend some time looking west particularly late in the day or early evening as the morning sun shines down on Africa.

NOVICE LICENSING CONDITIONS

Novice amateurs may now operate on the two metre band between 146 and 148 MHz up to 10 watts of FM. This gives them access to repeaters, as well as any simplex operating they may choose to undertake.

In welcoming them to the VHF spectrum I hope some will find a desire to upgrade their licences to permit them to enjoy the great opportunities which exist on the other parts of the band in addition to the other bands which could be available to them.

With two metres now open to novices, a band is now available to all amateurs whatever their licence structure and this must, in the long run, only be to the betterment of band usage and the amateur service generally.

WITS FROM EVERYWHERE

Ian VK3AAU lives at Myrtleford, 200 kilometres north-east of Melbourne, in a mountainous region and is able to copy the beacon VK3RTG most of the time while VK3RCW fades in and out of the noise. David VK3AUJ, is very strong with Ane VK3AMZ, even better. He says the VK3RAI beacon runs five watts at present but needs the power supply upgraded for better results. Ian always monitors 144.00 MHz when in the shack.

The West Australian VHF Group Bulletin lists the two remaining beacons VK6RTU at Kalgoorlie and VK6RPP at Port Hedland, as being operational. That being so, it means the final checking has been done on the beacon list which, for the time being, should be accurate.

Practical Wireless, April 1988, pro favours Steve VK5AM, reports that, despite no six metre operation being permitted closer than 150 kilometres to a television station and/or to a number of other designated areas, there are still 38 defined areas with unrestricted operation and two partly affected. Although low power restrictions apply, no rules apply to antenna gain.

Some form of six metre operation is now permitted in the UK, France, Ireland, Holland, GBR, Portugal, Norway, Iceland, Malta, Greece and Cyprus. With the latest projections indicating the possibility of Cycle 22 being an all-time best, contacts between some of the areas and Australia are a distinct possibility. It is perhaps, unfortunate for VK that such a large area exists to out-north-west where, as a rule, no six metre operation is permitted. Perhaps something might change that!

50 — 54 MHz DX STANDINGS

DXCC Countries based on information received up to June 15, 1988. Cross-band totals are those not duplicated by six metre two-way contacts. Credit has not been given for contacts made with stations when 50 MHz was not authorised.

- Column 1 Six metres two-way confirmed
- Column 2 Six metres two-way worked
- Column 3 Cross-band (8 to 10) confirmed
- Column 4 Cross-band (8 to 10) worked
- Column 5 Countries heard on 50 MHz
- Column 6 Countries heard on 52 MHz

CALL SIGN	1	2	3	4	5	6
VK8GB	42	42			13	
VK4ZJB	31	31				4
VK2BA	30	30				
VK2VC	27	27				
VK2QF	26	26				
VK2DDG	25	26		2	12	3
VK3OT	25	26			10	
VK3AWY	22	22				
VK2JAP	21	23				
VK5LP	21	22		6	3	
VK2BNN	20	21				
VK4ALM	20	20				
VK3QX	19	20			1	1
VK4TL	19	19				
VK7JH	18	20			2	
VK4ZAL	18	18				
VK3AMK	17	17				
VK9KT	17	21				
VK3AUJ	17	21				
VK3NM	16	17				
VK4ZSH	15	16				
VK2ZRU	15	18			1	3
VK3ZZX	12	13				
VK9YT	12	14				
VK8OX	10	10	1	1		

VK6RO	9	9	3	3	2	3
VK4KHZ	8	10				
VK8HK	8	13		3	2	
OVERSEAS						
JA2TTO	46	48			6	

A minimum of five countries confirmed (including VK) is required for an operator to be listed.

The list position is determined by the number of confirmed contacts. Where two or more operators claim the same total, those first date listed with that total can only be displaced by another having a greater number of confirmed contacts.

The next list will appear in February 1989, and entries will need to be on my desk no later than December 15, 1988. Claimants are reminded that full details of all contacts are required, viz date of contact, time in UTC, call sign of station worked, country, mode, report sent and received, QSL sent and whether received, split frequency contacts should be indicated. Please add your own call sign, signature and date.

I reserve the right to request and examine any QSL cards which may be needed to support an application for listing. To assist your claim a useful idea is to include photocopies of the back and front of the QSL cards.

FTAC NEWSLETTER

The June 1988 newsletter contains the FTAC Annual Report plus considerable other material including details of the 10 GHz Provisional Band Plan (published in May 88). If you have a worthwhile submission to make on the suggested band plan, then I urge you to start writing. The narrow band segment is listed between 10.368 and 10.370 GHz, and includes a segment for beacons.

It pleases me, now-a-days, to be included in the disseminated information from FTAC, especially as I have specific interests in band planning and beacons. In return, I am now in a position to advise FTAC of the accurate position of active beacons in VK and those areas within out VHF range. I leave the HF beacons to those directly involved!

LATE INFORMATION

Maurel VK3XEX writes to say that six metres opened on June 11, between 0740 and 0840 to VK4s CEU, ANR, KUY, KU and ZMF. Also heard VK2 working into VK7.

Maurel also says the Ballarat beacon on 432.535 MHz has been off the air for about two years, but is expected to be operational again in about two weeks. I will give it time to get back on and will start listing it again from next month.

Graham VK6RO, has sent details of contacts reported in the Japan ham radio magazine of May 1988, covering contacts between 28.2 and 24.3. In all, there are 286 listings and the majority are with VK stations.

I note there was an opening to VK3 on 28.2 around 1830, when VK3s BDL, AMZ, XO and AZY were worked. For the next month, the beacons VK8VE, in Darwin, and VK8RTT, at Wickham, figure prominently as also does VK6SIX at Hong Kong. Obviously the earlier report that it was not operating was incorrect.

VK8 stations to be worked include VK8s ZLX, KTM, ZMA from Alice Springs and VK8ZWM from Darwin. There have been contacts right down to Perth and include VK8s RO, KXW, WD, IU, JQ, OD, AWE. Of these, VK8IU appears to be the only station in the north-west to take advantage of VK8RTT being heard so often.

Prominent stations from VK4 include VK4s RIK, LE, ALM, KU, FXZ, DEA, FNQ, FXX, WL, KT, JH, DO, IZ, JXZ and ACG. Also noted was VK2EMA.

From other areas P29s PL, ZEF, ZFS, ZWM, ZJS, VK9JL, YB0CXN, K06DX, FT1TS, V56VF, V56EL, YC0UOV, H44GR, H44DL, KH2E, T22J, H44GP FK1TK and HL9CB.

It is significant that most of the contacts so far have been above the Tropic of Capricorn. Given the rising sunspot numbers, it is conceivable that September could see the area being worked shift below the Tropic. The warnings are out — get your

equipment in working order or miss out on TOP contacts plus some early F2 openings.

It appears the only station on six metres in Darwin is VK8ZWM, as this is the only station to be listed from there apart from VK8VF the beacon which was being heard almost on a daily basis throughout March.

MICROWAVE STANDINGS

Bill Tynan WX3O, in his columns *The World* above 50 MHz in QST for April 1988, has a Microwave Standings list which may interest VK operators. On 902 MHz the greatest distance claimed is 476 miles (770 km) by W2PQC, 1240 MHz 2519 miles (4056 km) by N5XQ, 2300 MHz 840 miles (1351 km) by W6VYD and K06RO 3300 MHz 288 miles (464 km) by W8S, UA/5, 5600 MHz 331 m (533 km) by K5PJR and W5UGO/0, 10 GHz 414 miles (667 km) by W6SFH/6 and N6GN/6, 24 GHz 165 miles (266 km) by KX00 and 47 GHz 14 miles (23 km) by WA3RMX/7 and W8TUNU/7.

Australian operators now know what distances they require to better some of these distances. For 2.3 and 3.3 GHz, the VK distances are well in excess of those listed.

CLOSURE

As I was sitting in front of the typewriter wondering if I had missed anything, I was idly observing the map of the world in front of me. I could not but help notice how far we are from South America. Adelaide to Buenos Aires in Argentina is about the same distance as to London! Both around 12 000 kilometres and a long way even for six metres.

Congratulations to Trevor VK5NC, for winning the last Ross HJ Memorial Contest. He put a lot of effort into the contest and deserved to win.

It had been hoped to present the Ross HJ Trophy to Trevor at the SERG Convention over the June holiday weekend. However, the trophy could not be found. But Rice VK3AB finally tracked it down in Perth where it was in a deplorable state having been neglected for several years. Reports are to be carried out in Adelaide after which the trophy will be presented to Trevor on an appropriate occasion.

Closing with two thoughts for the month: "The definition of a free society is one where it is safe to be unpopular" and "To entertain some people you have to lose it."

73 The Voice by the Lake

IS YOUR STATION QSG?

At first glance, a listing in the *Penguin Dictionary of Science* appeared to be a Q-Code.

But that was not the case. Did you know that QSG stands for Quasi stellar galaxy — a quasar that is not a radio source. Quasars are sources of high energy electro-magnetic radiation.

Perhaps QSG can be appropriately added to the Q-Code to denote where an inactive amateur radio station?

DID YOU FIT THE DEFINITION?

The *New Dictionary of American Slang* has just been published. It says a computer enthusiast in slang is called a "Ch phed".

FUTURISTIC AUSSAT

The next generation of AUSSAT, due for service from 1992, is likely to include a transponder for mobile radio.

Tenders for AUSSAT mentioned transponders operating in the 1.6 GHz "L" band which could give Australia a world lead in the development of domestic mobile satellite communications.

It would allow communications with moving vehicles such as cars, trucks and trains as well as aircraft and boats.

It has been suggested that as many as 50 000 mobile terminals could be in use within 10 years of introducing the service.

The AUSSAT payoad is also likely to have an experimental 28 GHz radio beacon.



Spotlight on SWLing

Robin Harwood VK7RH
5 Helen Street, Launceston, Tas 7250

As I am writing this we are in the middle of Winter here in northern Tasmania. So far, it has been comparatively mild, although very damp, after a prolonged drought. Being indoors has meant that I have spent some time in the radio shack. As the Solar Flux has increased, so has propagation and I have been having "a ball", particularly on 14 and 24 MHz, two of my favourite bands.

Listening about on other frequencies has also proved extremely interesting with plenty of odd signals about. There was a anti-Nicaraguan clandestine operation on 6.214.5 MHz around 1150 UTC, on June 11. Naturally, it was in Spanish and it was a typical fast paced delivery with numerous slogans,ingles, etc. I was surprised to hear the identification change on the hour. Before 1200, it was the well-known "R 15 Septiembre" which has been the voice of one of the "Contra" factions. The different identification from 1200 was "R. Liberacion". Immediately I reached for my back copies of the *International Listening Guide* and checked. Sure enough, on 5.990 MHz several "Contra" stations were listed from 1100 continuously to 0300 UTC. Besides the above two stations, there was a third — "R. Miskut". All three belong to different factions and apparently came together in a unified effort, presumably under outside pressure.

I did check on 5.990 MHz but it was clear, so it appears as if they have altered to the 8 MHz channel. Yet it is an odd choice as it is in the middle of the same ship radio-telephone channels world-wide. I firmly believe that this operation is probably shifting about in a 'cat and mouse' game with Nicaraguan armies. Interestingly, at the same time, the Nicaraguan Sandista Government and the "Contra" guerrillas were engaged in abortive peace talks in Managua. I did notice, on

the American network news, via the AFRTS, that there had been a falling out among some contra factions, so presumably these groupings were establishing themselves on radio. The "ILG" stated that the "Contra" station was running 10 kW.

Whilst on the subject of clandestine stations, I came across "R. Magallanes" on 11.860 MHz around 0230 UTC. This USSR based-station has been operating since the fall of the Allende Government in Chile during 1973. We usually hear it very well on numerous frequencies here in Tasmania, for the beam comes right over Tasmania after hitting Chile. Programs naturally support the Chilean Government in exile, as the Communist Party which is banned, as are all political parties in Chile. Broadcasts are in Spanish, of course.

Another USSR based station broadcasting in Spanish is "R. Pax y Progreso" — Radio Peace and Progress. This station also has been around for many years and states it is "the voice of Soviet public opinion". I think it's recent operations may have been cut back as it mainly targets Latin America and China. I remember monitoring their English language broadcasts several years ago to south-east Asia. Although it has shared facilities with Radio Moscow, it apparently comes under the control of the KGB. There are other Soviet based stations including "R. Rodina" — Voice of the Homeland, which targets Russian emigres worldwide, R. Atlantika, and R. Rikhiy Okean" — Pacific Ocean are stations specifically designed for the Soviet merchant marine and fishing fleets. The latter even has reportedly a five minute news bulletin in English on Saturdays.

I recently took part in a two-way exchange between Japan and Australia, specifically between the Nara Amateur Radio Club and the Northern Branch of the Wireless Institute of Australia, here

in Launceston. This was arranged by the Launceston branch of the Australian Japan Association, to coincide with a visit by a delegation from that city to the Nara Silk Road Expo 88.

A sched was arranged for 21300 MHz at 0400 UTC, on June 4. However, a though conditions were excellent that day, JA signals were well down and swamped by signals coming from the Americas, Europe and even Africa. It was ironic that the day when we specifically wanted to contact JA on 15 metres, it was very much easier to go elsewhere in the world. The station at the Nara and was 8133.8 MHz and was located in the Kasuga area of the Nara Expo — the Cultural Communications Pavilion.

Contact was established a few kilohertz off the nominated frequency and also was one hour earlier than originally planned. We utilized the call of VK7NB/P and had the local president of the Australian Japan Association and his daughter-in-law, who happened to come from the area. The delegation from Launceston was at hand in Nara, but due to poor propagation and probably much crowd noise in Nara, we were not able to successfully exchange two-way communications.

I note that Radio Beijing has increased the number of times they broadcast to the Pacific area. For a long time they have been on from 0830 to 1025 daily on 9700, 1755 and 15,440 MHz. Now they come through as well at 1100 and 1300 UTC using OOB channels. The frequencies are 7820 kHz and 11,290 MHz. The former frequency is very loud, with traces of over-modulation but the 11 MHz signal is down, at least here in Launceston. They are in English, naturally.

Well, that's all for August. Don't forget the RD Contest on August 13 and 14. Good Luck!
73 de VK7RH.

LET'S REMEMBER OUR BASICS

Geoff Taylor VK5TY

16 Fairmont Avenue, Black Forest, SA 5035

There was a voltage on the aerial terminals of the little portable television set. Every time anyone touched them they received a "bite". The set had been returned to the manufacturers but they could find nothing wrong.

So, let us make some checks. A multimeter shows 40 volts from the aerial connection to earth, so that is what is giving the "bite". A look at the circuit reveals that there is simply no 40 volts at any point in the circuit. More probing with the multimeter only produces answers that agree with the voltages the circuit says should be at the places where they should be. Except that there is still 40 volts on the aerial terminals!

When all else fails, let's go back to the basics.

The portable television has no mains transformer (to save on weight) so the 240 volts from the mains goes straight to the chassis. There is, however, an isolating capacitor in the aerial line, so the 240 volts cannot appear there — it's 40 volts, not 240 volts that we read from the multimeter.

Let's look at the isolating capacitor. Say, for example, it is a 100 pF capacitor (this is about what would be expected). The multimeter reading shows 40 volts through 100 pF. What does that really mean? What about the internal impedance of the multimeter?

Most multimeters are relatively high impedance (typical 100 kohms per volt). Now we shall calculate the impedance between the mains and the external aerial terminals.

If we look at the mains voltage and it's frequency we have:

$$\frac{230 \text{ Volts}}{50 \text{ Hertz}}$$

Applying the formula

$$X(c) = \frac{1}{2\pi fC}$$

so, on 50 Hertz

$$Xc = \frac{1}{2\pi \times 50 \times 100 \times 10^{-12}}$$

$$= 10711$$

or approximately 30 Mohms.

(the same capacitor at 60 MHz has a reactance of about 25 ohms)

From Ohm's Law, with 240 volts AC applied, the current through a 30 Mohm impedance is 8 microamps.

Reverting to the multimeter reading, moving-coil meters are current operated devices, and since the 30 Mohm impedance is far higher than

the internal resistance of the meter, (on the 100 volt range) the current through the meter will be restricted by the 30 Mohms independent of the meter resistance. Changing the range of the multimeter will not necessarily change the reading of the meter.

Since it is usually accepted that 50 milliamps can be fatal, the maximum current under these circumstances is approximately 1/6000 of this value.

Thus, we have a situation where you can get a "bite" from the aerial, however the current is limited to a safe limit.

The solution? A smaller value capacitor would reduce the "bite" but not remove the problem. An insulated aerial connector would leave the aerial itself alive. A resistor from the exposed metal to earth would solve the problem entirely but what do you use as an earth with transformerless devices? The most practicable solution is to reverse the active and neutral connections at the mains plug so that the neutral is connected to the chassis and not the active.

The problem is peculiar to transformerless mains operated radio equipment, so if you should encounter this problem, this article may help you find a solution.



Contests



Frank Beech VK7BC
 FEDERAL CONTEST MANAGER
 37 Nobelius Drive, Legana, Tas. 7251

CONTEST CALENDAR

AUGUST 1988

- 13 — 14 **YL/OM Summer SSB Sprint**
- 13 — 14 **WIA Remembrance Day Contest** (Rules July issue)
- 13 — 14 **European DX Contest CW Section** (Rules July issue)
- 27 — 28 **All Asian CW Contest** (Rules June issue)

SEPTEMBER 1988

- 11 — 11 **European DX Contest SSB Section** (Rules July issue)
- 24 — 25 **CO WW DX RTTY Contest**

OCTOBER 1988

- 1 — 2 **VK-ZL-Oceania DX Contest** (Rules this issue) SSB Section
- 8 — 9 **VK-ZL-Oceania DX Contest CW Section**
- 8 — 9 **IRSA Radiooperating Contest**
- 29 — 30 **CO WW DX SSB Contest**

NOVEMBER 1988

- 11 — 13 **Japan International DX Contest**
- 12 — 13 **European RTTY Contest**
- 26 — 27 **CO WW DX CW Contest**

YL/OM SUMMER SSB SPRINT

Rules
 From 1800 until 2200 UTC, Saturday, August 6, 1988

As the name implies, this is a short four-hour contest organised by the YLRL. Only contacts between YLs and OM's count. Use all HF bands from 80 to 10 metres. No net or repeater contacts. No WARC bands.

Exchange — Call sign, RS, Name, and State, Province or DX Country.

Scoring —
 A) One point per QSO. The same station may be worked once on each band.

B) Alpha-numeric multiplier, using the last number and the first letter following that number of the call. ie W1XZ is 1X, W2ZLB7 is 2G, 8Y4A is 4 A, etc. A total of 26 combinations is possible, 26 letters with each number.

C) Low power bonus of 1.5 for stations using 200 watts PEP at all times.

D) Final Score: Total QSO points (A) times the multiplier (B) times the low power bonus (C) if applicable.

Frequencies — 3.955, 7.255, 14.265, 21.395, 28.395 MHz, plus or minus 15 kHz.

Awards — Certificates to the highest scoring YLs and OM's. Also to the top scoring YL and OM in each US district, VE province, and DX country (minimum of 10 valid contacts).

Print or type logs, showing scoring, and the signature of the operator is also requested.

All entries must be received by September 15, by Mary Lou Brown NM7M, 504 Channel View Drive, Anacortes, Washington 98221 USA.

This contest would be a good opportunity to work the YL stations on the 15 and 10 metre bands from our area, especially those who are going for the many awards that are available from the ISSB, etc. (Ed)

Good luck to you all in the Remembrance Day Contest. Please take note of the general rules for WIA contests, and the Contest Disqualification Criteria, that was published in the June issue of AR. And get logs in early, please.

Rules of the 1988 VK-ZL-OCEANIA DX CONTEST

FOR OVERSEAS ENTRANTS

1. SSB
 Within a 24-hour period from 1000 UTC Saturday,

October 1, to 1000 UTC, Sunday, October 2, operate for a maximum of 12-hours. Take your operating periods in one hour blocks, based on "even hour to even hour" in UTC, eg 1000 to 1100 UTC, or 1300 to 1500 UTC, etc, with minimum periods of one hour.

CW

Within a 24-hour period from 1000 UTC Saturday, October 8, to 1000 UTC, Sunday, October 9, operate for a maximum of 12-hours. Take your operating periods in one hour blocks, based on "even hour to even hour" in UTC, eg 1000 to 1100 UTC, or 1300 to 1500 UTC, etc, with minimum periods of one hour.

Receiving

SSB and CW Combined in the above times (maximum total of 24-hours).

2. Only one contact per mode per band is permitted. All bands may be used except WARC bands.

3. SCORING

For stations operating outside Oceania, score two points for each contact with VK, ZL, or Oceania stations. Oceania stations score two points for all contacts.

NB. Oceania stations are those which qualify as Oceania for WAC.

4. FINAL SCORE

Multiply total QSO points by the sum of all VK/ZL/O prefixes worked on all bands. (The same VK/ZL/O prefix worked on a different band counts as a different unit).

5. CIPHERS

Exchange a five or six digit number composed of RS/T report, plus a three digit sequence number beginning at 001 and increasing by one for each QSO on that band.

6. LOGS

a) Separate logs for each band please and for SSB and CW.

b) Show date, time UTC, call sign of each station contacted, ciphers sent and received.

c) Indicate clearly each new VK/ZL/O prefix worked (underline, highlight or show in separate column, as in CQ WPX).

d) State QSO points claimed for each band.

e) State VK/ZL/O prefixes claimed for each band.

f) Summary sheet to show:

- ** Call sign, Name and Address
- ** Total QSO points claimed on all bands.
- ** Total VK/ZL/O prefixes contacted on all bands.
- ** Total points claimed.
- ** Declaration that the rules were observed.

Post logs to: NZART VK/ZL/O Contest Manager, ZL1AAS, 146 Sandpiper Road, Howick, New Zealand. Logs to arrive by February 15, 1989.

7. SWLs

A VK, ZL, or Oceania station must be heard in a contest QSO - logs to be set out as for transmitting section.

8. AWARDS

Separate awards for SSB and CW.

a) Special certificate to the top scorer in each continental area.

b) Special certificates to the top scorers in each country.

c) Participation certificates to all entrants on request (One IRC for postage please).

** Copy of relevant results available on request (One IRC for postage please).

FOR VK AND ZL STATIONS

Check the rules for Overseas Stations.

Rules 1, 2, 5, 6 as for Overseas stations except in Rule 8.

3. VK and ZL stations are permitted to contact each other only on 160 and 80 metres. VK/VK, ZL/ZL and ZL/VK contacts are permitted on these two bands.

4. SCORING

Different points for contacts on different bands are as follows:

- 160 metres — 20 points
- 80 metres — 10 points
- 40 metres — 5 points
- 20 metres — 1 point
- 15 metres — 2 points
- 10 metres — 2 points

Total score will be the total QSO points multiplied by the total number of prefixes worked. The same prefix worked on a different band is counted NOTE: K1, W1, AA1, N1, etc, are all different prefixes. W1AA1/6 would count as W6 not W1.

6. CHANGE

Logs to arrive by December 9, 1988.

7. SWL SECTION

As for Overseas but...

* VKs must hear and log ZL or other stations (no VK stations).

* ZLs must hear and log VK or other stations (no ZL stations).

8. AWARDS

Separate awards for SSB and CW.

a) Special certificates to top scorers in each prefix area.

b) Special certificate to top scorers on each band.

c) Participation certificates to all entrants on request. (One IRC for postage please).

Any further information can be obtained from: The NZART VK/ZL/O Contest Manager, John Litten ZL1AAS, 146 Sandpiper Road, Howick, New Zealand.

RADIO OLD TIMERS' CLUB

Members are reminded of the 80 metre VK/ZL Old Timers' QSO Party on Monday, August 8, 1988.

Rules in Capital OTN 4.

THE 12TH WEST AUSTRALIAN ANNUAL

3.5 MHz CW and SSB CONTESTS

Transmitting and Receiving

1. DURATION

CW — Saturday and Sunday, July 30 and 31, 1988.

SSB — Saturday and Sunday, September 17 and 18, 1988.

On both days between the hours of 1100 and 1330 UTC, ie five operating hours in all for each contest.

2. FREQUENCIES

All contacts to be made in the 3.5/3.7 MHz band using frequency allocation applicable to your licence conditions.

3. CALLING

Stations will call CQ WAA. Using the three times three technique, infringement of this rule by the use of long CQ calls may entail disqualification as will prearranging of a QSO.

4. SCORING

Points for contacts are as follows:
 Within Western Australia — 10 points per contact
 WA to all Mainland Eastern States — 20 points per contact

WA to VK7 — 40 points per contact
 WA to VK6 and Overseas — 80 points per contact

Three points per contact with WA stations only.

5. MULTIPLIERS

A multiplier of two for Western Australian Shire worked will apply to the final score. For Western Australian stations north of the 26th Parallel an additional multiplier of 1.3 per contact confirmed.

with stations south of the 26th Parallel will also apply.

6. CONTACTS

Stations may be worked twice on each night, ie once between 1100 to 1300 UTC and again between 1300 to 1330 UTC. These contacts will count for points. Each time the contact for WA stations will take the form of an exchange of five characters comprising RS/T and Shire letters, eg a station in Northern sends 579WJ or if in Hanley 579HY, this helps towards the Worked All Shires Award. Eastern states and overseas stations will send RS/T plus a running number starting at 001 7 LOGS

Contest logs are to be set out on one side of a quarto or folio sheet with columns headed as below.

DATE:	CALL:	OPERATOR:
TIME UTC	CALL RST RST IN OUT	SHIRE LETTERS
	SHORE MUT LETTERS	POINTS CLAIM

Column seven to be totalled at the foot of each page and the running totals brought forward. The last page to contain the following summary. Total number of points scored. Input power. Equipment and Antennas used, along with comments on the contest in general. SWL participants score as above using the outgoing transmit score.

All logs to be addressed to WAA Contest, Comm. Box 42 Kennedy Street, Melville WA 6156 and posted so as to reach the destination not later than October 14, 1988 for both contests. The results for both contests will be published in December's issue of *Amateur Radio*.

SHIRE LETTERS			
1. Albany Town	AT	70. Leeton	LA
2. Albany	AL	71. Manildra	MA
3. Armadale	AK	72. Manildra	MP

4. Augusta Margaret	AM	73. Meekatharra	MH
5. Busselton	BA	74. Melville	MY
6. Bayswater	BW	75. Meekatharra	MC
7. Bengerly	BE	76. Meekatharra	MD
8. Boddington	BD	77. Meekatharra	ME
9. Bouldry	BO	78. Meekatharra	MA
10. Boyer Brook	BB	79. Meekatharra	MB

11. Bridgetown	BS	80. Meekatharra	MS
12. Broome	BR	81. Meekatharra	MB
13. Broome	BE	82. Meekatharra	ME
14. Broomehill	BR	83. Meekatharra	MD
15. Broomehill	BR	84. Meekatharra	ME

16. Bruny Island	BU	85. Meekatharra	MB
17. Bulahdelah	BL	86. Meekatharra	MB
18. Bulahdelah	BL	87. Meekatharra	MB
19. Bulahdelah	BL	88. Meekatharra	MB
20. Bulahdelah	BL	89. Meekatharra	MB

21. Bulahdelah	BL	90. Meekatharra	MB
22. Bulahdelah	BL	91. Meekatharra	MB
23. Bulahdelah	BL	92. Meekatharra	MB
24. Bulahdelah	BL	93. Meekatharra	MB
25. Bulahdelah	BL	94. Meekatharra	MB

26. Bulahdelah	BL	95. Meekatharra	MB
27. Bulahdelah	BL	96. Meekatharra	MB
28. Bulahdelah	BL	97. Meekatharra	MB
29. Bulahdelah	BL	98. Meekatharra	MB
30. Bulahdelah	BL	99. Meekatharra	MB

31. Bulahdelah	BL	100. Meekatharra	MB
32. Bulahdelah	BL	101. Meekatharra	MB
33. Bulahdelah	BL	102. Meekatharra	MB
34. Bulahdelah	BL	103. Meekatharra	MB
35. Bulahdelah	BL	104. Meekatharra	MB

36. Bulahdelah	BL	105. Meekatharra	MB
37. Bulahdelah	BL	106. Meekatharra	MB
38. Bulahdelah	BL	107. Meekatharra	MB
39. Bulahdelah	BL	108. Meekatharra	MB
40. Bulahdelah	BL	109. Meekatharra	MB

41. Bulahdelah	BL	110. Meekatharra	MB
42. Bulahdelah	BL	111. Meekatharra	MB
43. Bulahdelah	BL	112. Meekatharra	MB
44. Bulahdelah	BL	113. Meekatharra	MB
45. Bulahdelah	BL	114. Meekatharra	MB

46. Bulahdelah	BL	115. Meekatharra	MB
47. Bulahdelah	BL	116. Meekatharra	MB
48. Bulahdelah	BL	117. Meekatharra	MB
49. Bulahdelah	BL	118. Meekatharra	MB
50. Bulahdelah	BL	119. Meekatharra	MB

51. Bulahdelah	BL	120. Meekatharra	MB
52. Bulahdelah	BL	121. Meekatharra	MB
53. Bulahdelah	BL	122. Meekatharra	MB
54. Bulahdelah	BL	123. Meekatharra	MB
55. Bulahdelah	BL	124. Meekatharra	MB
56. Bulahdelah	BL	125. Meekatharra	MB
57. Bulahdelah	BL	126. Meekatharra	MB
58. Bulahdelah	BL	127. Meekatharra	MB
59. Bulahdelah	BL	128. Meekatharra	MB
60. Bulahdelah	BL	129. Meekatharra	MB
61. Bulahdelah	BL	130. Meekatharra	MB
62. Bulahdelah	BL	131. Meekatharra	MB
63. Bulahdelah	BL	132. Meekatharra	MB
64. Bulahdelah	BL	133. Meekatharra	MB
65. Bulahdelah	BL	134. Meekatharra	MB
66. Bulahdelah	BL	135. Meekatharra	MB
67. Bulahdelah	BL	136. Meekatharra	MB
68. Bulahdelah	BL	137. Meekatharra	MB
69. Bulahdelah	BL	138. Meekatharra	MB
70. Bulahdelah	BL	139. Meekatharra	MB

FIRST ANNUAL "59 PLAQUE" JAPAN INTERNATIONAL DX CONTEST November 11-13, 1988

The monthly DX magazine called *Five Nine "59"*, announces that a new DX contest will be held in November 1988. *Five Nine* was established in 1985 as a DXers magazine by DXers for active DXers in Japan. The purpose of this contest is to accelerate the activity of radio amateurs in Japan and to establish as many contacts as possible between Japan and world-wide stations during the contest period.

1. CONTEST PERIOD: 48 hours from 2300 UTC November 11, to 2300 UTC November 13. Only 30 hours operation out of the 48 hours contest period is permitted for DX Single Operator stations. Off periods consisting of at least 60 minutes each time must be clearly marked in the log. Multi-operator stations may operate the full 48 hours.

2. BAND AND MODE: 80 - 10 metres (except new WARC bands), Phone

3. ENTRY CLASSIFICATIONS:

- 1. Single operator multi-band
- 2. Single operator 80 metre band
- 3. Single operator 40 metre band
- 4. Single operator 20 metre band
- 5. Single operator 15 metre band
- 6. Single operator 10 metre band
- 7. Multi-operator, multi-band

One transmitted signal at any given time. Once the station has begun operation on a given band, it must remain on that band for at least 10 minutes, listening time counts as operating time

4. CONTEST EXCHANGE

1. JA station. RS report plus Prefecture number (No 01 to No 50)

2. DX station. RS report plus progressive three-digit contact number starting with 001 for the first contact

5. POINTS

- 1. Contacts among DX stations or among JA stations will neither count as a point or a multiplier.
- 2. For one completed contact on the 80 and 10 metre bands: two points. For 40 - 15 metre band: one point
- 3. The same station may be worked only once per band - no cross-mode, cross-band or repeater contacts.

6. MULTIPLIERS

1. JA Station. The numbers of different DXCC countries (except JDT) worked on each band.

2. DX Station. The total numbers of different Japanese Prefectures plus Ogasawara Island (JDT), Minami-Tonshima Island (JDT) and Okinawa Island worked on each band. Maximum of 50 (see the list) per band.

7. SCORING

QSO points times multipliers equals the final score

8. LOGS

- 1. Use separate sheets for each band
- 2. All time in UTC
- 3. Fill in blanks of "multipliers" by countries or prefixes, only the first time on each band
- 4. The 16-hour non-operating periods must be clearly shown on logs
- 5. Logs must be checked for duplicate contacts and correct points. Duplicate contacts must be

clearly shown. Computerised logs must be checked for typing accuracy. Original logs may be required if further cross-checking is required

6. Entrants with more than 500 contacts in total must include cross-check sheet (dupe sheet)

9. PLAQUES

1. Plaques will be awarded to the top scorer in each entry category on each continent and Japan

2. Additional special plaques will be awarded to the top single operator multi-band and multi-operator multi-band in the three United States areas which are divided by CQ Zones.

10. AWARDS

Certificates will be awarded to those who win the highest score in each entry in proportion to the number of participants from each country and also from each call area in the United States and Japan

- a) The number of participants under 10. Certificates to the highest scorers only.
- b) From 11 to 20. Certificates to the runner up.
- c) From 21 or more. Certificates to the top third

11. SPECIAL CONTEST AWARD

Any entrant who worked all the Japanese prefectures (No 01 to No 47) during the contest period can request a Special Contest Award with the contest log - no IRCs needed

12. REPORTING

- 1. Submit a summary sheet and logs of only one classification
- 2. The log and summary sheets should be postmarked by December 31, 1988 and addressed to Five Nine Magazine, Japan International DX Contest, PO Box 8, Kamata, Tokyo 144, Japan
- 3. Entrants may have the contest results by enclosing one IRC and SAE with logs
- 13. DISQUALIFICATION
 - 1. Violation of the contest rules
 - 2. False statement in the report
 - 3. Taking points from duplicate contacts on the same band in excess of two percent by the total

—Continued by Tosh Kusanagi JA1ELV Editor

RSGB 21/28 MHz SSB CONTEST - 1988 Rules

Transmitting Section

ELIGIBLE ENTRANTS - British Isles RSGB members only. Overseas (including Eire) All licensed amateurs.

PERIOD - 0700 to 1900 UTC, October 9, 1988.

SECTIONS -

- a. British Isles Single Operator
- b. British Isles Multi-operator Multi-band
- c. Overseas Single Operator
- d. Overseas Multi-operator

FREQUENCIES AND MODE - 21 and 28 MHz telephony only. Entrants are requested to operate within the bands 21 150 to 21 350 and 28 450 to 29 000.

QSY RULE - An entrant who QSYs from one band to the other and makes a scoring contact may not change bands again until at least 10 minutes has elapsed since the last scoring contact on the original band.

EXCHANGE - RS report and serial number starting at 001

SCORING FOR NON-UK STATIONS - Three points for each completed contact with a station in the British Isles. Multipliers are G2, G3, G4, G5, G6, G8, G9, GD2, GD3, GD4, GD5, GD6, GD7, GD8, G12, G13, G14, G15, G16, G17, G18, G19, G20, G21, G22, G23, G24, G25, G26, G27, G28, G29, G30, G31, G32, G33, G34, G35, G36, G37, G38, G39, G40, G41, G42, G43, G44, G45, G46, G47, G48, G49, G50, G51, G52, G53, G54, G55, G56, G57, G58, G59, G60, G61, G62, G63, G64, G65, G66, G67, G68, G69, G70, G71, G72, G73, G74, G75, G76, G77, G78, G79, G80, G81, G82, G83, G84, G85, G86, G87, G88, G89, G90, G91, G92, G93, G94, G95, G96, G97, G98, G99, G100, G101, G102, G103, G104, G105, G106, G107, G108, G109, G110, G111, G112, G113, G114, G115, G116, G117, G118, G119, G120, G121, G122, G123, G124, G125, G126, G127, G128, G129, G130, G131, G132, G133, G134, G135, G136, G137, G138, G139, G140, G141, G142, G143, G144, G145, G146, G147, G148, G149, G150, G151, G152, G153, G154, G155, G156, G157, G158, G159, G160, G161, G162, G163, G164, G165, G166, G167, G168, G169, G170, G171, G172, G173, G174, G175, G176, G177, G178, G179, G180, G181, G182, G183, G184, G185, G186, G187, G188, G189, G190, G191, G192, G193, G194, G195, G196, G197, G198, G199, G200, G201, G202, G203, G204, G205, G206, G207, G208, G209, G210, G211, G212, G213, G214, G215, G216, G217, G218, G219, G220, G221, G222, G223, G224, G225, G226, G227, G228, G229, G230, G231, G232, G233, G234, G235, G236, G237, G238, G239, G240, G241, G242, G243, G244, G245, G246, G247, G248, G249, G250, G251, G252, G253, G254, G255, G256, G257, G258, G259, G260, G261, G262, G263, G264, G265, G266, G267, G268, G269, G270, G271, G272, G273, G274, G275, G276, G277, G278, G279, G280, G281, G282, G283, G284, G285, G286, G287, G288, G289, G290, G291, G292, G293, G294, G295, G296, G297, G298, G299, G300, G301, G302, G303, G304, G305, G306, G307, G308, G309, G310, G311, G312, G313, G314, G315, G316, G317, G318, G319, G320, G321, G322, G323, G324, G325, G326, G327, G328, G329, G330, G331, G332, G333, G334, G335, G336, G337, G338, G339, G340, G341, G342, G343, G344, G345, G346, G347, G348, G349, G350, G351, G352, G353, G354, G355, G356, G357, G358, G359, G360, G361, G362, G363, G364, G365, G366, G367, G368, G369, G370, G371, G372, G373, G374, G375, G376, G377, G378, G379, G380, G381, G382, G383, G384, G385, G386, G387, G388, G389, G390, G391, G392, G393, G394, G395, G396, G397, G398, G399, G400, G401, G402, G403, G404, G405, G406, G407, G408, G409, G410, G411, G412, G413, G414, G415, G416, G417, G418, G419, G420, G421, G422, G423, G424, G425, G426, G427, G428, G429, G430, G431, G432, G433, G434, G435, G436, G437, G438, G439, G440, G441, G442, G443, G444, G445, G446, G447, G448, G449, G450, G451, G452, G453, G454, G455, G456, G457, G458, G459, G460, G461, G462, G463, G464, G465, G466, G467, G468, G469, G470, G471, G472, G473, G474, G475, G476, G477, G478, G479, G480, G481, G482, G483, G484, G485, G486, G487, G488, G489, G490, G491, G492, G493, G494, G495, G496, G497, G498, G499, G500, G501, G502, G503, G504, G505, G506, G507, G508, G509, G510, G511, G512, G513, G514, G515, G516, G517, G518, G519, G520, G521, G522, G523, G524, G525, G526, G527, G528, G529, G530, G531, G532, G533, G534, G535, G536, G537, G538, G539, G540, G541, G542, G543, G544, G545, G546, G547, G548, G549, G550, G551, G552, G553, G554, G555, G556, G557, G558, G559, G560, G561, G562, G563, G564, G565, G566, G567, G568, G569, G570, G571, G572, G573, G574, G575, G576, G577, G578, G579, G580, G581, G582, G583, G584, G585, G586, G587, G588, G589, G590, G591, G592, G593, G594, G595, G596, G597, G598, G599, G600, G601, G602, G603, G604, G605, G606, G607, G608, G609, G610, G611, G612, G613, G614, G615, G616, G617, G618, G619, G620, G621, G622, G623, G624, G625, G626, G627, G628, G629, G630, G631, G632, G633, G634, G635, G636, G637, G638, G639, G640, G641, G642, G643, G644, G645, G646, G647, G648, G649, G650, G651, G652, G653, G654, G655, G656, G657, G658, G659, G660, G661, G662, G663, G664, G665, G666, G667, G668, G669, G670, G671, G672, G673, G674, G675, G676, G677, G678, G679, G680, G681, G682, G683, G684, G685, G686, G687, G688, G689, G690, G691, G692, G693, G694, G695, G696, G697, G698, G699, G700, G701, G702, G703, G704, G705, G706, G707, G708, G709, G710, G711, G712, G713, G714, G715, G716, G717, G718, G719, G720, G721, G722, G723, G724, G725, G726, G727, G728, G729, G730, G731, G732, G733, G734, G735, G736, G737, G738, G739, G740, G741, G742, G743, G744, G745, G746, G747, G748, G749, G750, G751, G752, G753, G754, G755, G756, G757, G758, G759, G760, G761, G762, G763, G764, G765, G766, G767, G768, G769, G770, G771, G772, G773, G774, G775, G776, G777, G778, G779, G780, G781, G782, G783, G784, G785, G786, G787, G788, G789, G790, G791, G792, G793, G794, G795, G796, G797, G798, G799, G800, G801, G802, G803, G804, G805, G806, G807, G808, G809, G810, G811, G812, G813, G814, G815, G816, G817, G818, G819, G820, G821, G822, G823, G824, G825, G826, G827, G828, G829, G830, G831, G832, G833, G834, G835, G836, G837, G838, G839, G840, G841, G842, G843, G844, G845, G846, G847, G848, G849, G850, G851, G852, G853, G854, G855, G856, G857, G858, G859, G860, G861, G862, G863, G864, G865, G866, G867, G868, G869, G870, G871, G872, G873, G874, G875, G876, G877, G878, G879, G880, G881, G882, G883, G884, G885, G886, G887, G888, G889, G890, G891, G892, G893, G894, G895, G896, G897, G898, G899, G900, G901, G902, G903, G904, G905, G906, G907, G908, G909, G910, G911, G912, G913, G914, G915, G916, G917, G918, G919, G920, G921, G922, G923, G924, G925, G926, G927, G928, G929, G930, G931, G932, G933, G934, G935, G936, G937, G938, G939, G940, G941, G942, G943, G944, G945, G946, G947, G948, G949, G950, G951, G952, G953, G954, G955, G956, G957, G958, G959, G960, G961, G962, G963, G964, G965, G966, G967, G968, G969, G970, G971, G972, G973, G974, G975, G976, G977, G978, G979, G980, G981, G982, G983, G984, G985, G986, G987, G988, G989, G990, G991, G992, G993, G994, G995, G996, G997, G998, G999, G1000, G1001, G1002, G1003, G1004, G1005, G1006, G1007, G1008, G1009, G1010, G1011, G1012, G1013, G1014, G1015, G1016, G1017, G1018, G1019, G1020, G1021, G1022, G1023, G1024, G1025, G1026, G1027, G1028, G1029, G1030, G1031, G1032, G1033, G1034, G1035, G1036, G1037, G1038, G1039, G1040, G1041, G1042, G1043, G1044, G1045, G1046, G1047, G1048, G1049, G1050, G1051, G1052, G1053, G1054, G1055, G1056, G1057, G1058, G1059, G1060, G1061, G1062, G1063, G1064, G1065, G1066, G1067, G1068, G1069, G1070, G1071, G1072, G1073, G1074, G1075, G1076, G1077, G1078, G1079, G1080, G1081, G1082, G1083, G1084, G1085, G1086, G1087, G1088, G1089, G1090, G1091, G1092, G1093, G1094, G1095, G1096, G1097, G1098, G1099, G1100, G1101, G1102, G1103, G1104, G1105, G1106, G1107, G1108, G1109, G1110, G1111, G1112, G1113, G1114, G1115, G1116, G1117, G1118, G1119, G1120, G1121, G1122, G1123, G1124, G1125, G1126, G1127, G1128, G1129, G1130, G1131, G1132, G1133, G1134, G1135, G1136, G1137, G1138, G1139, G1140, G1141, G1142, G1143, G1144, G1145, G1146, G1147, G1148, G1149, G1150, G1151, G1152, G1153, G1154, G1155, G1156, G1157, G1158, G1159, G1160, G1161, G1162, G1163, G1164, G1165, G11

penalised at the rate of 10 times the claimed points. Entries with more than five unmarked duplicates are open to disqualification.

LOGS — Log sheets to be headed date, time UTC, station worked, RS and serial number sent, RS and serial number received, multiplier, points claimed. A summary sheet listing multipliers worked on each band must be included.

DECLARATION — With each entry there must be a declaration, signed and dated, that the station was operated within the rules and that the decision of the council of the RSGB shall be final.

ADDRESS FOR LOGS — All logs must be sent to RSGB Contest Committee, PO Box 73, Lichfield, Staffs, WS13 6JL, England. These entries must be received by December 31, 1988.

AWARDS — Overseas stations will be awarded certificates for the leading three entrants overall and at the discretion of the contest committee, to the leading station in each country.

RSGB 21 MHz SSB CONTEST —

Receiving Section

Rules as for the transmitting section except as varied below.

ELIGIBLE ENTRANTS: British Isles RSGB members only, Overseas (including Eire), All SWLs. Note that transmitting licences for frequencies above 30 MHz only may enter the receiving section.

SCORING — Overseas SWLs should log only British Isles stations in contact with overseas

stations taking part in the contest. Scoring and multipliers as the transmitting section.

LOGS — Logs to be headed date, time UTC, call sign of station heard, RS and serial number sent, by station heard, call sign of station being worked, multiplier, points claimed. A summary sheet listing multiplier heard on each band must be included.

NOTE: In the column headed station being worked, the same call sign may only appear once in every three contacts logged except when the logged station is a new multiplier for the receiving station. Also, the station heard may only be logged once on each band for the purpose of scoring.

DECLARATION — Each log must be accompanied by the following declaration: "I declare that this station was operated within the rules of the contest and I do not hold a transmitting licence for frequencies below 30 MHz."

AWARDS — As in transmitting section.

CONTEST DISQUALIFICATION CRITERIA

A standardised approach is taken to the disqualification of logs entered in all of the contests which come under the direct control of the Federal Contest Manager appointed by the Federal Executive.

It is suggested that you take note of this particular issue of the magazine for reference to these general rules in the case of all contests for the ensuing year. Details are as follows.

DISQUALIFICATION A entry in WIA conducted contests may be disqualified if, upon checking the logs, it is necessary that the overall score be reduced by more than two percent. Score reduction does not include correction of arithmetic errors. Reductions may be made of unconfirmed QSOs or multipliers, duplicate QSOs or other scoring discrepancies.

An entry will be disqualified if more than two percent duplicate QSOs are detected as being claimed for credit.

For each duplicate or mis-copied call sign removed from the log by the contest manager, a penalty of the deletion of three additional QSOs of equivalent value to the offending claim may be applied.

The penalty will not be considered as part of the two percent disqualification criterion.

If a participant is disqualified under these aforementioned provisions that operator will be barred from entering the contest for that particular mode in the ensuing year: eg Disqualification from the 1988 RD Contest, phone section will prohibit an entry for the 1989 RD Contest phone section. However, participation in the 1989 RD Contest's CW section would be allowed.

Logs which are very untidy, illegible or incorrect in layout to a major degree may also be disqualified. The call signs of disqualified participants may be listed in *Amateur Radio* magazine, together with the contest results.



How's DX?

THANK YOU

Thank you for making our DXpedition to Cocos-Keeling (VK9Y) and Christmas Island (VK9X) such a great success! Over 37 000 QSOs were made. Most of the contacts were on the 15 metre band, followed by 10, 20, 40, 30, 12 and 160 metres, with CW and SSB contacts being 50/50.

The first three weeks were spent on Cocos-Keeling using the call signs VK9Y and VK9XKG. The radio club equipment of VK9YY was used for this part of the expedition (TS-440, linear, eight-element Log Pericord on a 25 metre tower, an element Log Pericord on a 20 metre tower, two-element 40 metre Delta Loop, dipoles and long wires). It was a perfect location for DX and would make an ideal contest location as it consists of eight old school rooms that could be used for separate shackles. From Cocos-Keeling all 40 QZones were worked and a most 200 countries.

The next four weeks were spent on Christmas Island using the call signs VK9XT and VK9XKG. Only a little over 17 000 contacts were made but all zones were again worked.

As there is no longer a club station on Christmas, the TS-440 was loaned from Cocos Radio Club and was used in conjunction with a variety of dipoles, long wires, verticals and a Rhombic.

Another DXpedition to a Pacific island is now in the planning stages.

All QSLs are requested to be sent direct to the home QTH of the operator (any donations would be greatly appreciated).

Scotty Martin V7SW/VK9YT/VK9XT, 7847 SW 11th Avenue, Portland Oregon, 97219 USA.
George Koutsoukos VK9NKG/VK9NKG/VK9XNKG, 154 Warwick Road, Duncairn, WA 8023.

Contributed by Scotty Martin V7SW

WORKING THE RARE ONE IS POSSIBLE...

It always amazes me when and where a rare DX station may appear. I consider the following experience rare because I personally have not worked any Canadian stations for a considerable period of time.

The other Saturday I took my family for a pleasant drive in the country near Mittagong. My wife enjoys long-etich tapestry and a store was having a sale. This excursion cut into my afternoon leisure activity of "playing radios". Consequently I did not get on-air until about 1200 UTC.

After tuning for about 40 minutes and having thoughts of going QRT, especially as conditions were poor, I heard C18CW working a number of US stations. Propagation was almost non-existent, however I decided to give a call. I was heard and reports were 5/5 both ways!

It only goes to show that working the rare one is possible if you try, no matter what power you may be running. In my case, it is sometimes harder than most as my output is about five watts to an antenna system of a simple long wire!

C18CW is one of the stations of the USSR/Canada Expedition which became operational March 1. It comprises skiers of the SKITREK Expedition travelling from Cape Arichesky on Severnaya over the North Pole to Cape Komarov on Ellesmere Island. This expedition is a privately funded operation and I believe QSL cards should be sent to Box 313, D Mills, Ontario, Canada, M3C 2S7.

Following is a list of stations heard on 20 metres during April and May.

APRIL

N7DF/NH2 — QSL to KOHNDW

HP3EP

AP2SP

FR4DN — QSL to P Mondon, CD18, Avirons, 97425, Reunion Island
K9AJ/KH5 — QSL to WA2MCE

MAY

C31UA

EM3MW — QSL to UZ3AZO

EU0A — QSL to UG7GWA

V44KAR — WV2.CH

4S7RO

WORKED DURING MAY

Q4B7O, E58AMX, JP1AAZ, U4EXPR, E05BGR (Special prefix used on May 9, 1988, to mark end of WWII hostilities in Europe)

E05BGR — QSL to RB7GG

G4AP1, E02PPP, V188SA (Moota Bay Scouts), H5GR, H6GN, JB4CWW, HG7B, UZ6YWB, H4SKKC, YU301 IT9NDP, Y34K, NT2X, EA3EGB, HB0CZS, DL0JK, K10G, V188NSW, DK2MH, W7/B K3EST, LU4FM, C18CW, J03FVK, I4JBJ, VE6CRP, VE7CZE, C18CR WY5L/KH3 (Jornston Island QSL to N5DAS).

— Contributed by Bob Demko

RAIF RADAR REUNION

The Air Force Association announces a reunion, the first of its kind to be held in Canberra from September 13 to 15, 1988. It is for all Air Force personnel who served during World War II on radar stations or in squadron radar operations. More information from Ms J Dunbar (02) 913 8843, Bob Balfour (02) 875 1068, or write to Radar Branch President, W Fielder-Gill, 1 Douglas Avenue, Chatswood, NSW 2067.

Contributed by W Fielder-Gill and P Williams VK5NH

QSLs from the WIA Collection

Ken Matchett VK3TL
HONORARY CURATOR
PO Box 1, Seville, Vic. 3139

Looking every bit like a QSL card from Denmark, OZ4XC is, nevertheless, from New Zealand and it has an interesting history.

In the latter part of the 1920s, more and more amateurs in foreign countries were exchanging signal reports. The need for a call sign identification which indicated each station's country was obvious. The International Amateur Radio Union (IARU) devised the system of "intermediates" that became effective from February 1, 1927.

If, for example, New Zealand station 4XC were to call Brazilian station 2AB, the operator would no longer call 2AB (three times) de 4XC (three times) as with a local call, but would transmit 2AB (three times) abox 4XC (three times). The combination "aboz" was known as the "intermediate" between the two stations and was always written in lower case. The "ab" stood for South America(s) Brazil(s). This was followed by a standing for Oceania(s) New Zealand(s).

Unfortunately, as international traffic increased, the intermediate was frequently lost in the QRM. Later it was suggested that each intermediate precede the station call (for example, oZ4XC, ab2AB) and that the intermediate "de" (French for

from) again be used as previously between the two stations' call signs. This the above transmission became ab2AB de oZ4XC.

A later proposal was that the old intermediates be used as "prefixes" to the call and, moreover, that they become an integral part of the station call sign so much so that they be written in capital letters like the rest of the call. So OZ4XC became the station call OZ4XC.

This system of intermediates was soon to be replaced, however, by our present system of prefixes and block call sign allocations on January 1, 1929, as a result of the historic International Radiotelegraph Convention at Washington.

The card, XNU7EFF, as well as having a very long call sign, contains the interesting X prefix. The letter X in the call sign of experimental stations has a very long history. The first experimental stations in Australia bore this prefix (although it was seldom, if ever referred to as such in those days before World War I).

The letter X placed before a normal station call sign had quite a different meaning. Sometimes it meant "portable" but more often it indicated a

ship's station with an amateur call, and in the 1920s was generally written with a lower case "x", eg xnu 7EFF. Only in the latter part of the 1920s, both the intermediate "nu" together with the "x" were written in capital letters as on this QSL card. The NU in those years showed the licensee to be from the United States of America.

There were several ship stations in the late 20s operating with amateur call signs. Amongst them were xoptDR (Philippines), xoaSAM (Australia), xanXCP (Netherlands), XEBAWK (Belgium).

A station, XOXR, in Australia operated frequently on the amateur bands in the early 1930s with a portable call sign XUOXR (anyone save prefixes?).

The ship operator of XNU7EFF was using only a modest 50 watts to a Tuned Grid — Tuned Plate (TGTP) circuit, an antenna 120 feet long (probably a halfwave dipole on the old 3.800 MHz band) with the frame of the ship as an earth. The Australian operator, Percy VK4RO, (now VK2EPW) was using the newly issued VK prefix when he made his QSO with this ship somewhere in the China Seas.

F. J. OGRADY, 4 Hart Street, Roslyn, DUNEDIN, N.Z.

OZ-4XC

see gal 1/25's CUL Oper. *Ken Ogrady*

Station **XNU 7EFF** on **40C** side WED. 1937 - GWT 14 ft / 29...

XNU 7EFF

Barley Richards 7-3-1

Antenna 120 ft. 50 ft. High
Ship Frame.

On Wind 10 15.3 6 28 30. AB. 70

On 89 08 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80 84 88 92 96 100

Remarks: *4-10-37*

QSL *see 1/25's CUL*

ORD 00 125



Intruder Watch

Bill Martin VK2COP
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW 2077

THOUGHT FOR THE MONTH: If you remember the thought for last month, then this is the sequel: "With no transceiver in the shack, one must be doubly patient!" However, with any luck, I will have the unit back in a couple of weeks.

Many reports are coming in regarding the Asian intrusions on 28 MHz. There have been 286 AM mode transmissions reported for May, and most of those were the Asian nuisances. I have written to the DOTC about it, but received no acknowledgment, as yet. Perhaps it would help if a lot of AR readers sent a note off to the Department?

There were 83 cases of intrusions using CW; 230 on RTTY; 120 using other modes, and 18 intruders

sent their call signs. Many thanks to the following for helping out with reports for May: VK2s EYI and JJM, VK3s DID, DSW and XB; VK4s ADY, BHJ, BTW, BXC, FBA, IS, KAL and OD; VK5s GZ and TL, VK6RO, VK7RH, VK8s HA and JF.

I recently received a letter from Michael VK3EMJ, with an accompanying report of the problem on 10 metres, and Michael is asking, "What can be done about it?"

Well, as I have mentioned before, you can send in reports to the Intruder Watch. These complaints are forwarded to the DOTC. If nothing is done by the Department, then I can only suggest that each individual amateur who protests the presence of illegal stations on the amateur 28 MHz allocation

writes to the Department. The IW can only draw the attention of the Department to the problem. I know that the administration of at least one of the countries concerned knows what is going on, and is trying to stop it, but the problem is so widespread, that the effect is minimal. The other country's Administration is either not aware of the problem, or doesn't care. This is typical of the attitude of a lot of Administrations overseas, particularly the USSR.

So, all we can do is to keep tabs on the problem, and keep complaining. Send in those reports. See you then, and good DX.



TECHNICAL MAILBOX

with AR's Technical Editors



REPEATERS AND BEACONS

Why are novice amateurs allowed to run 30 watts output on SSB, but only 10 watts on AM or CW?

Why is it, if I put a 20 watt fluorescent tube near my ATU in the G5RV it lights, even though my output is about four to five watts?

When the tube is near the pi network on the transmitter it does not light. Why? Recently, I have improved the ATU by putting in a more efficient coil, but I cannot get the tube to light. Is it because more power is going into the air and not being wasted in the ATU?

Firstly, it is great to hear from our younger novice members.

Both questions could involve quite lengthy explanations but I will try to keep the answers as short as possible.

Why the 30/10 watt limit was placed upon novice amateurs by DTC is something you would have to ask the Department. The answer could be most revealing! Let us guess and say it may be part of an incentive licensing scheme. It surely could not be due to personal safety aspects associated with the differing levels of theory required for the licences.

Simply put, a single sideband speech signal of 30 watts Peak Envelope Power (PEP) equates approximately to 10 watts steady carrier whether Amplitude Modulated or not.

However, what is the comparison as far as useful received signal level is concerned?

Let me turn the question around and ask you the difference in dB between the two signals as quoted. Consider the power in each sideband of the AM transmission and the fact that only one is necessary at the receiver (SSB) and compared with 30 watts of single sideband. You could also go as far as taking into account the difference in the maximum band width required of an AM receiver (10.79 dB and 13.79 dB respectively).

Considering the actual difference, you may still ask the question: Why?

Now, in the second question regarding the fluorescent tube — again, I will not go too deeply into the subject. Basically the fluorescent tube requires a potential difference across the internal gas to make this gas ionise. When the gas ionises, this in turn excites the internal coating of the tube and causes this to fluoresce and emit light.

The potential difference or electric field must exceed the breakdown voltage of the internal gas which may be expressed as a field strength in volts per metre.

In your case, by placing a 20 watt fluorescent tube near your ATU you have placed it within the RF field. The strength of this field will naturally be dependent on the voltages present at the ATU (assuming it is, of course, not shielded). If the RF voltage (electric field) exceeds the breakdown voltage of the tube it will glow. It may, at first, seem strange that a 20 watt tube will light up from a five watt source, but you will notice that the light output from the tube is nowhere near what it would be when consuming 20 watts at its rated voltage.

When you place the tube near the Pi Output Tank you have observed that it does not light. Obviously, the field strength here is lower than the tubes breakdown voltage. From this you can deduce that the ATU is radiating and not all your power is reaching your antenna.

With the latter type of coil in the ATU, the tube does not light. This may mean more power is going to the antenna, but it may also mean that the changed shape or size of coil produces less external field. The only sure deduction is that the field strength is now less than it was in the place where the tube formerly lit.

If you were to place the tube near a voltage point on the antenna (say, at one end), it might then give some indication of power in the antenna, but at best, it would be only crudely qualitative.

Tim Mills VK2ZTM

FTAC BEACON CO-ORDINATOR
PO Box 300, Caulfield South, Vic 3162

10 GHz BAND PLAN

Do you have any comments on the plan published in May AR? Please convey them to either your Federal Councillor, Divisional Technical Officer or to FTAC, via the Federal Office.

REPEATER — BEACON LISTINGS

The list published in January is being updated. Does your group have any changes to be included?

PAGER INTERFERENCE

There has been little comment received to items about the problem in these notes. Your input is desirable so that the conclusions to the investigation includes your viewpoint.

50 CENTIMETRE BAND

ATV operation overlaps part of channel 35. Later this year there will be a translator at Broken Hills, Wollongong, using 35. The planning of UHF television surrounding Sydney has used up the majority of the UHF band. Wollongong is the first major centre to have a wholly UHF service. Commerce WIN-TV will have 1000 kW EIRP on Channel 59. It would appear that Newcastle will change at a later stage also to a total UHF service.

UHF — MICROWAVE SURVEY

Have you supplied your input to this recent survey? Contact your Divisional Technical Officer for details.

IAN J TRUSCOTTS

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- RANGE OF MURATA CERAMIC FILTERS & RESONATORS



Pounding Brass

Gilbert Griffith VK3CQ

7 Church Street, Bright, Vic 3741

Having just posted off July's column yesterday, I thought I would strike me in the weather is bad and say "giddy Morsiacs" again as soon as possible. You never know when the chance of a holiday will come along. So, if you are waiting to see your name in print, my lead! Me this month is about 10 weeks!

Next month will be the anniversary of "The Morseman" column in *Break* (the NZART equivalent of AR) written by Gary Boz ZL1AH. Good on you Gary! I arranged for me to be sent a copy of *Break* in and he gets a copy of AR, so that I can copy some snippets from his column. I say that because he always seems to write three or four times as much as I do, and his editor actually puts up with it! He also received a free 8044 chip from Curtia Electro Devices to do his write-up on. Following is a snippet from one of his earlier columns.

Back in the early days of Morse (and Vail), in their original (American) code, introduced in 1938, 11 letters were different from the ones we now use. Morse's "I", "L", and "O" were represented by dashes of different lengths. "J" and "Q" were both "didadidit" (our "F"), and "F" was didadidit, while "R" was "dit didit". Some letters had internal spaces! "C" was "IEI", "O" was "EE", "Y" was "II" and "Z" was "SE". The correct letter combination was apparently determined by context! The ampersand (&) was then commonly used, even in formal writing and was defined as "dit dididit" or "ES". This "binary symbol" has persisted to this day as the standard CW abbreviation for "and", (don't that more blue).

Last year, or maybe the year before, everybody and his dog were complaining to Phil VK3CQD, and the clipped sound of his dots. I admit that some of us may have exaggerated a little in the interests of general stirring, and caused Phil a bit of worry at the time. But now, thanks to Gary, I have been enlightened.

Problems with weighting on Morse are not only caused by the keyer or key. It seems that minor variations in weighting were used by the Allies to identify particular U-Boat transmissions in World War II (see an engroing article by John Roscoe G4QK in *Morsum Magnificus*, number 5). Do you subconsciously recognise CW friends by their list or by the weighting on their signals?

Slight and unnoticed feedback can hold the keying circuit on for a few milliseconds too long. In some cases a good dose of RF feedback will hold the transmitter on permanently, (a problem you can sometimes solve over the air if you recognise the symptoms). This problem often shows up on a particular band or antenna while using high power. During the John Moyle Field Day this year, I was setting up portable on Mount Hotham and my 15 metre dipole on over 40 watts caused the rig to lock on transmit. I cured it in about five seconds by wrapping the earth-bus braid around a joining connector in the line from the keyer to the rig. Don't ask about the half-hour off the air because I bumped the squelch knob.

A sluggish keying relay can cause either heavy or light weighting. Can you think of any other causes?

How can weighting be checked? The side-tone oscillator is not a reliable guide, as it doesn't reflect exactly what goes up the coax. You can look at the RF with a scope, but it is difficult to see the small timing difference, and not everybody has a scope.

The best way is to use a field strength meter, in the shack, picking up stray RF. The meter should have a long time constant, and a linear scale. You can put one together with a junk-box diode, a

tuned circuit, a microammeter, 1 Mohm and 1 microfarad — gives the one second time constant for good averaging. Wind the speed right up on the electronic keyer and send continuous dots. Note the meter reading (which is proportional to the average level of the RF). Now switch to a continuous carrier at the same power level. Divide the meter reading for the "dot stream" by the "continuous carrier" reading. The answer should be one half. If it is less than this, you have negative weighting or "clipped" elements. And vice-versa. If your rig has a meter reading output power that is reasonably linear you can use that instead. Note down the meter reading when sending a continuous carrier. Send a string of very fast dots and note the reading, it should be exactly half. If you know the keying speed, you can work out the weighting error using the equation $T = 1200(2R-1)/W$ where T is the weighting error in milliseconds, R is the ratio of "dot-stream" to "carrier" readings, and W is the keying speed in WPM. T positive means too heavy, and vice-versa.

If the weighting is wrong, what can you do? Check for RF feedback and use shielded cable for connections in the shack, especially from the paddle to the keyer and keyer to rig. Check that your equipment is all earthed properly, preferably with a heavy braid. I use the braid from old RG213 coax. Keep the length as short as possible to the ground stakes. A friend ran his earth-bus back a few metres to his house and found he picked up the local AM radio station which was probably mixing with his signal. A simple test on air cured the problem. If weighting is too light, try testing it with the rig in both full break-in and semi-break-in modes. This will show up a problem in the antenna relay.

(Phil tells me my rig clips the dots on full break-in, but I don't believe him!). You can tell the amount of delay a station is using on his semi-break-in by hearing the clipped dots on the beginning of words following a space which is long enough to allow his receiver to drop in, it is fairly easy to tell if he is hearing between words or only between the longer breaks.

Of course, you can simply adjust the weight control on your 8044ABM to compensate, it is great for that, but you will have to readjust for different speeds. Well, I already do that anyway.

Don't let's forget the Remembrance Day Contest on August 13 and 14.

The Air Asian CW Contest is on CW 27 and 28.

Let us show all amateurs that CW is alive and well — and the way to go!

If you have any old magazines, CW equipment in any condition, or books that you would like to see going to a good home, please give me a call or drop me a line. I am too far from the city to do the usual fossicking. I have gleaned from conventions usually wind up in a budding novice's shack or are sent, following requests by amateurs needing hard to get items. I am not considering starting a museum, even though my junk room is overflowing from its place at work to the garage at home.

I enjoy resurrecting old keys and keyers and passing them along to operators who will use them, also if you have a need for anything like the above, do not hesitate to write and ask. (Also software for CPC6128 on amateur subjects, which I don't have time to write).

How I envy the old timers who have a spare rig or more in the junk box either to loan to a friend or even use themselves on field days, or for mobile operation. Aside from a couple of spare keyers, all I

have at present is a chirpy QRP transmitter brew receiver, and a spare fuse for the main rig! Hopefully, by the time you read this I will have resurrected the Army 62 set for CW at least, as Mario VK3NL, you can borrow it, but only if doesn't interfere with your studies.

Thanks Lindsay VK3ANJ, for your contribution on American Morse. Lindsay also says, "it is interesting to read (in the notes he sent) copies of the standards of maths and physics required by those early telegraphists, equal, at least to present year 12. As demand increased for operators, the education standard decreased probably concentrating more on practical subjects centred around familiarity with standard equipment. A pattern which continues to the present at the expense of a better understanding of the art."

Way back in May this year, I received a letter from Tony Smith G4FAL, who is producing *Morsum Magnificus*. He says "I am having to raise the price of MM from the Autumn issue (Number 9) to take a more realistic view of the cost of a mail. Up to now all the overseas copies have gone airmail, for the cost of seamount. From Number 9 the airmail cost will be £8.50 with a surface mail option enabling subscribers to continue to receive MM at the old price of £7.00 if they don't mind waiting for their copy. New subscribers starting with the summer issue (Number 8) will however be accepted at the old rate and their first year's copies will still be sent airmail. So if anyone has been thinking about subscribing they still have a chance before the price goes up!"

Until next time, 73 Gil

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Education Notes

Brenda Edmonds VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic. 3199

Since examination development has now become a reality, it seems to be time to reconsider some of the aspects of organising examinations. I do not yet have a lot of information about which groups intend to conduct examinations, or when, but I have received some comments and views which are worth mentioning.

From surveys, discussions and responses received when the development was first mooted it is apparent that one of the major concerns for most people was that the entry standard for the hobby should not be allowed to fall. A few correspondents were worried that the standard may rise. Some of us placed more emphasis on the standard being even throughout than on the actual level.

The Department considers that the monitoring procedures being established will maintain both the present standard and the uniformity which we have come to expect from examinations prepared by only one body.

Besides the actual question papers or tapes, there are many other facets to an examination. Much criticism has been directed at the present system, especially at some of the larger centres. There has also been praise, from those who have appreciated the efforts made by DOTS staff to put candidates at ease. These comments often come from those who sat at the smaller centres or were a little for special examinations. Those who are intending to conduct examinations would be well

advised to seek feedback from recent candidates before finalising their planning.

It is unlikely that any group will be in a position to conduct an examination on the scale of a DOTS quarterly event. One of the biggest advantages of the development is that we can now avoid that situation. I would expect that the need to cater for more than about 20 candidates will not occur very often. This is a number that can probably be fitted into a club meeting room, a school room or perhaps a local library after normal hours.

No organisational procedures have been specified apart from checking candidate identity and maintaining security of the actual paper, so the organiser is free to arrange the venue to suit. In most cases it is hoped that the costs involved will be minimal so that candidates are not required to pay unreasonable fees, and organising bodies are not out of pocket.

It may be harder to find a venue with appropriate furniture. Ideally, there should be separate tables for all candidates, or at least tables large enough to allow plenty of space between candidates. This is necessary not only to avoid cheating, but also for the comfort, concentration and peace of mind of the candidates. Again, the use of a school room may be recommended, or a library well fitted with individual carrels. Please, organisers, check that the chairs and tables do not either wobble or squeak when in use!

Seemingly small matters assume major importance when an individual is under stress. Have a clock visible from all points in the room. Make sure the chairs are a suitable height. Keep to the published timetable, but if there are problems, or not allow candidates to untill all the papers are on the tables. If holding both AOCIP and Novice examinations, run them separately to avoid distraction of one group moving out while others are still going. Have at least two supervisors in the room at all times, even for very small groups. Try to have the room at a comfortable temperature.

Of course the situation for the CW sending and receiving will be different again.

I could go on, but I am sure that if the organisers give some thought to these minor matters they will be able to extend the list considerably, and the groups who attend to them all will develop a reputation for efficiency and understanding.

A reminder to those sitting for the Regulations in August — the questions will be based on the Handbook which has been in use for some years. The November paper will be based on the new leaflets from DOTS.

My best wishes to all who are making an attempt in August. Remember, read the question, and all the answers.



WICEN News

WICEN VICTORIA MOVES AHEAD

It is more than five years since the Ash Wednesday bushfire disaster. A restructured WICEN has since emerged in Victoria.

The disaster showed WICEN's strengths and weaknesses. A restructure plan was started following a major debriefing after the fire.

WICEN's self-examination and government investigations into the State's disaster preparedness also resulted in a reshaping of the Amateur Radio Service role.

A major effort has been in the standardisation of WICEN procedures throughout Victoria.

This is in recognition that should a major disaster occur over several days, members could be deployed from anywhere in the State. Volunteers from within WICEN have written a training manual for WICEN operators. A second publication — a regional co-ordinators handbook — is also about to be published covering the key areas of WICEN's role, structure, procedures and field operations.

A WICEN Central Committee has been dealing with a wide range of issues including liaison with State Government Statutory Committees and WICEN user groups.

Some other matters it deals with include preparation of public relations material, ID cards for WICEN members, State-wide nets, portable re-

peaters and examination of technology to enhance WICEN communication facilities.

Other projects now being undertaken are a promotional video on "Car Rallies and WICEN", an instructional video "Repeater and Portable Repeater Operations", and a compilation of footage from various events such as the Murray River Canoe Marathon, bike rides, horse riding marathons, vintage car rallies and yacht races.

WICEN has much greater recognition and a higher profile among the emergency services and government agencies. The awareness of WICEN has also resulted in more requests for its participation in exercises, with in excess of 50 exercises expected in this the Australian Bicentenary Year.

The two biggest events of the year will be the Control Vintage Car Rally which was held in March, and the forthcoming Caltex Bike Ride from Melbourne to Sydney via Canberra, in November and December.

WICEN has been making a plea, through radio clubs, for radio amateurs to take part in exercises which provide operators with excellent field and traffic handling experience.

Contributed by Jim Union VK3CFP, with acknowledgement to WICEN Co-ordinator, Leigh Baker VK3CDP

SILENT KEY

Well-known retired Ambassador William Porter, a Life Member of the ARRL, became a Silent Key earlier this year. This gentleman had a lifelong career with the Foreign Service.

During the course of his duties he activated such rare calls as CN8ER, FA2VX, 7X2VX, XV5AA, HL5AA, 7Z1AB, to name but a few. The family tradition of the hobby will be carried on by his son, William Porter KA4NAU.

AMATEUR OPERATION FROM KCC

KCC, the Federated States of Micronesia (FSM) formerly the East Caroline Islands, is now a sovereign, self governing nation in free association with the United States of America.

The FSM has yet to establish operating procedures for the licensing of radio amateurs and until this is done the FCC will assist by controlling the licensing arrangements.

RECIPROCAL IDENTIFICATION

The FCC has changed the identification procedure for reciprocal licence holders in America. As from July 18, 1988, the wording of the regulation is

"When the station is operating under a reciprocal permit, the call sign transmitted in the identification procedure must be that issued to the station by the licensing country, preceded by the appropriate letter-numeral designating the station location, separated by the slant mark '/' or by the word 'stroke' or 'slash' during radiotelephone operations. At least once during each intercommunication, the identification announcement must include the geographic location as nearly as possible by city and state, commonwealth or possession, stated in the English language"

—Adapted by Ken McLachlan VK3AH, from ARRL Newsletters Vol 7 No 10 & 11



AMSAT Australia

Colin Hurst VK5HI

8 Arndell Road, Salisbury Park, SA 5109

NATIONAL CO-ORDINATOR

Graham Ratcliff VK5AGR

INFORMATION NETS

AMSAT AUSTRALIA

Control VK5AGR

Amateur Check-In 0945 UTC Sunday

Bulletin Commences 1000 UTC Sunday

Primary Frequency 3 685 MHz

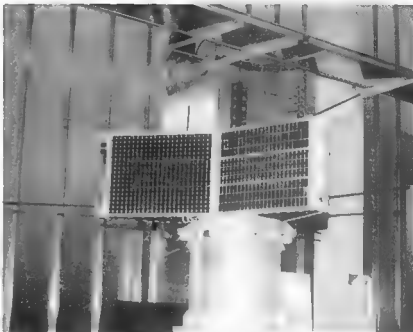
Secondary Frequency 7064 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements, from the AMSAT Australia net. This information is also included in some WIA Divisional Broadcasts.

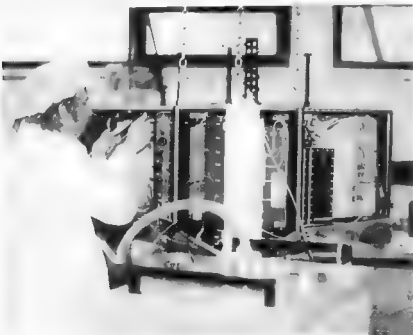
AMSAT OSCAR 13 LAUNCHED

On Wednesday, June 15, AMSAT OSCAR 13, previously known as Phase 3C was successfully launched. The following compendium of notes has been obtained from various bulletin boards in the time between launch and the deadline time for these notes. In the coming weeks there will, no doubt be a dearth of technical literature released on AO-13, now that the launch has been made. By all accounts, everything is operating as planned, and to quote Graham VK5AGR, "everything is nominal".

During the month I received the photographs included in this month's column from one of our erstwhile W-friends, Ross Forbes WB6GFJ. (The photographs are courtesy of Ross, AMSAT-DL and AMSAT-NA). Ross has been a contributor and ardent supporter of AMSAT-Australia and this column for many years. Ross in fact, donated the tungsten shields to protect the tops and bottoms of each radiation hardened memory chips contained in the integrated Housekeeping Unit (IHU). From us all "down-under" thanks Ross.



The Phase-3C satellite sits on the shaker table ready for vibration tests in West Germany in December 1987. The spacecraft was subjected to simulated launch vehicle vibrations to isolate any mechanical resonances.



THE LAUNCH ANNOUNCEMENT FROM AMSAT-AUSTRALIA

To ALL AT AMSAT

From VK5AGR June 15/1728
Subject: OSCAR-13 Successfully Launched

AMSAT OSCAR-13 was successfully launched at 11 19 04 330 UTC on June 15 aboard the new Ariane 4 Launcher from Kourou, in French Guiana.

The first telemetry signals were copied in Adelaide when the General beacon on 145.812 MHz switched on at 14 0335 UTC. The beacon was transmitting 400 Baud Phased Shift Keyed (PSK) telemetry. The first block received was an "M" block one of the four types of message blocks that can be transmitted on the PSK telemetry.

The message read

DANK! KARL

This message and the K, L, and N message blocks were preloaded before launch but I have included the "M" block because I feel that it sums up well the feelings of most — in that we all owe Karl Menzer DJ4ZC a debt of gratitude.

Wolfgang Mueller (AMSAT-DL) with a Helium sniffer looking for leaks in the Phase-3C propulsion system. None were found!

for his efforts (with the help of many others) in ensuring that OSCAR-13 became a reality. The launch itself went very smoothly with no known problems at this stage. ESA I am sure will be analysing all the data transmitted by their new Ariane 4 launcher to confirm that the launch was a 100 percent success.

Currently, the General Beacon on 145.612 MHz is transmitting CW at 10 WPM on the UTC hour and half-hour 50 Baud RTTY on the quarter and three-quarter hour with 400 Baud PSK telemetry for the rest of the time. The CW and RTTY run for approximately five minutes each. The PSK telemetry indicates that all systems on AO-13 are within specification. The average temperature in the spacecraft is 10 degrees Celsius. All voltages are on target. The attitude of the spacecraft is as expected, Longitude 270 and Latitude -20, which gives a Sun Angle of -21 degrees and the spin-rate is a very respectable eight RPM.

Peter DB2OS intends to re-orientate the spacecraft as soon as possible in preparation for the first kick-motor firing within the next week.

73 Graham VK5AGR (June 15, 1988 1722 UTC).

FIRST FEW DAYS OF AO-13'S LIFE

THE AMSAT NEWS SERVICE BULLETIN 101115 FROM WA2LOQ

WARWICK, NY June 11, 1988

To all radio amateurs BT

Following ejection from the carrying structure at T+80 minutes, a series of carefully planned activities is implemented. After a period of out-gassing, establishing thermal equilibrium and topping of the batteries, the Mode B beacon is activated at about T+170 minutes.

When the first frames of telemetry are received by command stations, they will be carefully checked to establish that all electrical, thermal and pressure values are within tolerance. An important assessment to be made as soon as possible is the attitude and spin rate of the satellite. If all seems according to plan, a decision will be made to activate the higher power engineering beacons (EB) on either two metres or 70 centimetres. Then,

careful monitoring of the telemetry will proceed thereafter in parallel with the first major task following launch — orbit determination.

Working in league with various government tracking facilities around the world, AMSAT engineers will attempt to get a good fix on AO-13 on the first few orbits. During this period, commands will be issued to the satellite which activate the magnetorquers during perigee passages. These devices, interacting with the geo-magnetic field, will change the orientation of the satellite to the desired one and spin it up like a top to a relatively high spin rate. The spinning, perhaps as fast as 60

Werner Haas DJ5KQ, applies a potting compound to the Liquid Ignition Unit (LIU) of the Phase-3C spacecraft. The LIU is part of the propulsion system and controls the on-board kick motor.

RPM, will add stability when the kick motor is fired within about a week or two of launch depending on satisfactory orbital determinations, attitude maneuvers and system operating conditions.

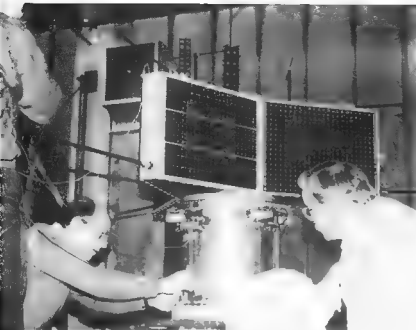
The next major task is to modify the GTO to a more usable one. The initial orbit as provided by the Ariane will have a 222 kilometre perigee; 36 000 kilometre apogee; 10 degree inclination. The desired final orbit has perigee at 1500 kilometres, apogee at about 36 000 kilometres and inclination at 57 degrees.

The orbit modification will be accomplished using the on-board rocket engine called a kick motor. This small rocket produces a thrust of 400 Newtons or a little under 100 pounds. That is enough to keep a small car rolling against frictional and aerodynamic forces on level ground. But on the 140 kilogram spacecraft, the result is much more noticeable. In a series of not less than two and likely not more than four episodes, the kick motor will be ignited to modify the GTO. The resultant acceleration imparted to AO-13 is an amazing 0.9 miles per second or about Mach 5. AO-13 could, in a sense, out run an SR-71 based on the acceleration yielded by the little M8B kick motor it carries.

The first kick motor burn will be accomplished as soon as possible; within a week of launch is likely. Plans call for a first burn yielding a delta V (change in velocity) of 454 m/sec, giving an intermediate orbit of 856 kilometres x 36086 kilometres with inclination of 26 degrees. Then, burn #2 would require a delta V of 904 m/sec giving a final orbit of 1500 kilometres x 36086 kilometres inclined 57 degrees. The first burn gives an opportunity to calibrate the motor performance by analysing the actual intermediate orbit. Quick and accurate ranging during this period will be essential. If the



AMSAT-DL technicians apply a protective cover to the Phase-3C solar panels.



Preparing the Phase-3C satellite for vibration tests in West Germany in December 1987. On the left is Karl Meinzer DJ4ZC, who is applying the accelerometers to the satellite prior to the shake test. Konrad Mueller of AMSAT-DL observes.

burn is a little short, another one with the same orientation can be accomplished to make up the difference.

PHASE 3C OPERATING FREQUENCIES **HR AMSAT NEWS SERVICE BULLETIN 149.07** **FROM AMSAT HEADQUARTERS** **WASHINGTON, DC May 28, 1988**

To all radio amateurs BT

As previously announced, here are the Phase 3C operating frequencies

Mode B	Uplink	435.420 — 435.570 MHz
	Downlink	145.875 — 145.825 MHz
	GB	145.812 MHz
	EB	145.985 MHz
Mode JL	L Uplink	1269.620 — 1269.330 MHz
	J Uplink	144.425 — 144.475 MHz
	RUDAK up	1269.710 MHz
	L Downlink	435.715 — 436.005 MHz
	J Downlink	435.990 — 435.940 MHz
	RUDAK down	435.677 MHz
Mode S	GB	45.651 MHz
	Uplink	435.601 — 435.637 MHz
	Downlink	2400.711 — 2400.747 MHz
	Beacon	2400.325 MHz

PHASE 3C KICK MOTOR BURN PLAN **HR AMSAT NEWS SERVICE BULLETIN 149.06** **FROM AMSAT HEADQUARTERS** **WASHINGTON, DC May 28, 1988**

To all radio amateurs BT

After months of planning, AMSAT engineers and scientists in several nations have jointly determined what they believe to be an optimal series of maneuvers to change the orbit of AO-13 from its initial value to a stable, useful one. They will achieve this, they say, with minimum risk given the

anticipated engine performance. To accomplish this involves close measurement of the orbit, careful calculation of the motor performance and timely execution of at least two kick motor burns.

The Ariane 4 launcher will place the three payload satellites in a so-called GTO or geosynchronous transfer orbit. With a perigee height of only 222 kilometres (137 miles), it is necessary to use the kick motor to boost the perigee as soon as possible. Each of the three satellites in the stack employs its own kick motor.

Initially, AMSAT will rely on European Space Agency and NASA tracking data for the orbital

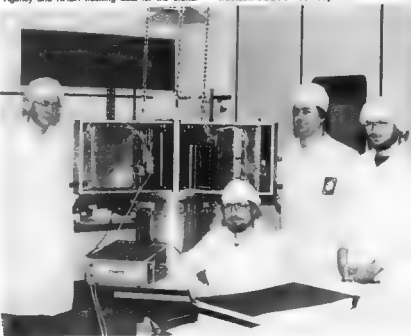
data. During the first few days AMSAT will employ its own tracking system for calibration only. AMSAT's technique depends on active ranging using round-trip delay time measurements to the satellite. Then after kick motor burn, AMSAT will do its own orbit determination. Because of the small radar cross-section of AO-13, it is very difficult to find at 36 000 kilometres. In a general sky-search using even the most powerful ground-based radars, it could not be located. However, given a fairly small vicinity in which to search, the large government radars can track with precision thereafter. AMSAT will thus narrow the search range using its own equipment and ranging techniques to provide vital hints to officials operating the radars.

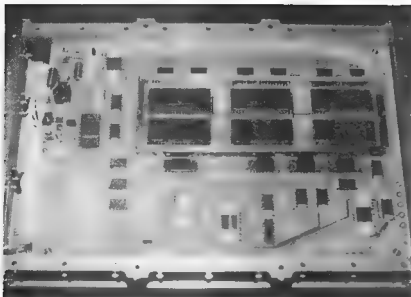
The initial orbit as provided by the Ariane will have a 222 kilometre perigee, 36 000 kilometre apogee, 10 degree inclination. The desired final orbit has perigee at 1500 kilometres, apogee at about 36 000 kilometres and inclination at 57 degrees.

The first kick motor burn will be accomplished as soon as possible, within a week of launch is likely. Atmospheric drag would cause the satellite to fall from orbit in a few weeks if nothing were done to raise the perigee. The strategy worked out by KA9Q, N4HY and G3RUH, is a conservative one which, according to KA9Q, uses the first burn to "make the second one safe. That is," he says, "the first burn should be just long enough so that at no time during the second burn will the instantaneous perigee decrease below a safe value of 500 kilometres."

Thus the plan calls for a first burn yielding a delta V (change in velocity) of 453.735 m/sec, giving an intermediate orbit of 856 kilometres x 36085 kilometres with inclination of 26 degrees. Then, burn #2 would require a delta V of 903.899 m/sec giving a final orbit of 1500 kilometres x 36085 kilometres inclined 57 degrees. The first

The Phase-3C satellite RUDAK digital repeater team from Munich consists of Gerhard Metz DG2CV, Hanspeter Kuhlén DK1YQ, Knut Brenndorfer DF8CA, Stefan Echert DL2MDL. Team member Peter Guelzow DB2OS was not present.





The Phase-3C Integrated Housekeeping Unit (IHU), a sophisticated computer which controls the satellite, now contains radiation hardened memory donated by Harris Corporation. It was designed by Steve Robinson W2FPY and built by Gordon Hardman KE3D.

The plan calls for all burns to be done at apogee. No attempt will be made to change the argument of perigee. With an initial setting at 178 degrees, apogee will occur nearly over the Equator. Apogee will move north such that 3.5 years after launch, apogee will occur at 57 degrees North Latitude. In another 3.5 years, apogees will return to the Equator. Thus, apogee will remain in the Northern Hemisphere for the first seven years of the satellite's operation and in the Southern Hemisphere for the second seven years.

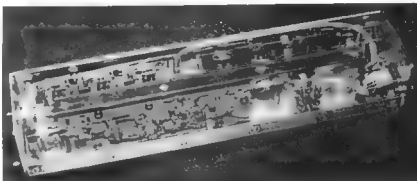
AMSAT-AUSTRALIA NEWS BULLETINS

A reminder for newcomers to the satellite ranks that the Sunday Evening News Bulletin, presented by Graham VK5AGR, (refer schedules at the head of this column) continues to be the best source of up-to-date and reliable news available anywhere in the world. With the successful launch of AMSAT OSCAR-13, the latest launch information, orbital elements, telemetry formulae, etc, will be disseminated by Graham as they come to hand. Stay tuned.

burn gives an opportunity to calibrate the motor performance by analysing the actual intermediate orbit.

Using available orbital data, DJ42C at AMSAT-DL will execute the first burn from Marburg, West Germany. KA9Q and N4HY in New Jersey, will then carefully determine the intermediate orbit and estimate the data V of the satellite. This will calibrate the motor performance during the first burn. With this data in hand, a precise second burn can be planned and executed perhaps within two or three weeks of the initial burn.

Quick and accurate ranging during this period will be essential. If the burn is a little short, another one with the same orientation can be accomplished to make up the difference. "If it is a little long," says KA9Q, "we will be taking more of a 'insurance dog-leg' than is necessary but we'll probably still make it to the final orbit. Clearly it would be better to err on the short side."



The Phase-3C Mode-S transponder was designed and built by a Colorado team under the leadership of Bill McCaa K0RZ.

SATELLITE ACTIVITY FOR THE MONTHS OF MARCH, APRIL

AND MAY TIME

1. LAUNCHES

The following launch announcements have been received:

INT'L NO	SATELLITE	DATE	NATION	PERIOD	APG km	PRG km	INC deg
027A	Cosmos 1930	Mar 30	USSR	08.0	280	108	64.3
028A	Soviet 15	Mar 31	USSR	24hr 30m	36600		1.8
029A	Cosmos 1937	Apr 05	USSR	108.1	813	774	77.0
030A	Cosmos 1938	Apr 11	USSR	98.4	218	289	72.8
031A	Foton 1	Apr 14	USSR	99.5	387	225	62.8
032A	Cosmos 1939	Apr 20	USSR	97.6	676	628	98.8
033A	OSCAR 32	Apr 26	USA	108.6	1382	1017	98.4
034A	OSCAR 32	Apr 26	USA	108.7	1218	1010	98.4
035A	Cosmos 1940	Apr 26	USSR	24hr 07m	35049		1.2
036A	Cosmos 1941	Apr 27	USSR	98.3	230	217	70.3
036A	Ekran 18	May 06	USSR	23hr 47m	36620		8.4
037A	Cosmos 1942	May 12	USSR	98.9	385	178	87.8
038A	Progress 36	May 13	USSR	98.8	282	183	51.0
039A	Cosmos 1943	May 15	USSR	101.2	876	851	71.2
040A	Interfer SAT 10	May 17	ITSO	137.3	35734	33364	6.8
041A	Cosmos 1944	May 18	USSR	98.4	211	280	54.0
042A	Cosmos 1945	May 18	USSR	98.3	291	217	70.4
043A	Cosmos 1946	May 21	USSR	118r 15m	19137		64.2
043B	Cosmos 1947	May 21	USSR	118r 15m	19137		64.2
043C	Cosmos 1948	May 21	USSR	118r 15m	19137		64.2

2. RETURNS

During the period 151 objects decayed including the following satellites:

1984-015A	Otobora	Apr 20
1984-052A	Cosmos 1967	Apr 03
1987-076A	Cosmos 1881	Mar 30
1988-025A	Cosmos 1935	Apr 08
1988-030A	Cosmos 1946	May 12
1988-082A	Cosmos 1982	May 17
1988-024A	Progress 35	May 05
1988-027A	Cosmos 1938	May 18
1988-036A	Cosmos 1938	Apr 25
1988-031A	Foton 1	Apr 28
1988-035A	Cosmos 1941	May 11

3. NOTES

1987-101A Cosmos 1900:

According to Soviet authorities, radio contact with this satellite was lost in April 1988; the nuclear powered satellite will stay in orbit until August-September 1988. After that, it will cease its existence; the satellite is equipped with systems providing radiological security on the termination of the flight and the flight is constantly monitored.

1988-038A Progress 36:

Decoded with space station MIR on May 15, 1988.

—Contributed by Bob Arnold VK5ZBB

**DEADLINE FOR
OCTOBER IS AUGUST
22, 1988**



Australian Ladies Amateur Radio Association

Joy Collis VK2EBX
PUBLICITY OFFICER, ALARA
Box 22, Yreval, NSW 2368

later in the day, and some interesting contacts were made. Unfortunately for me, work interfered on Tuesday 31st, limiting my time on air, but 80 metres was very good on both nights. Freda VK2SU, handled CW on three bands.

Perhaps the comment made by Margaret VK2PNG, summed it up: "Thanks, I did enjoy the evening."

Our thanks to the VK2 Division of the WIA for giving us the opportunity to use a Bicentennial call sign.

BICENTENNIAL CALL SIGNS

Several of the Bicentennial call signs have been or will be used by ALARA.

V188QLD

V188VIC

V188WIA

July 23 to 25

September or October

Date not determined

July 4 to August 1

October 31 to November 13

QSL information for

ALARA's use of V188WIA

is via the VK5 Bureau.

BYLARA AWARDS

These awards are available for working YL members of BYLARA and are also available to short-wave listeners.

BYLARA Award

Work 15 BYLARA mem-

Advanced

BYLARA

Award

Work 30 BYLARA YL

Members

If you already hold the BYLARA Award, you only need to work another 15 YLs and send the log details with your award number for checking. Scottish BYLARA Award Work 15 GM BYLARA YL members

Each award costs £1 50 or four IRCs

Full log details should be clearly presented and should, if possible, include the BYLARA membership numbers of the stations worked. QSL cards are not required. Contacts can be made on any band and any mode, except repeaters.

Applications to Award Managers: Joy Stirling GMDGUU, 43 Springfield Park, Kinross, Fife, Scotland.

MAVIS STAFFORD BICENTENNIAL AWARD

The Mavis Stafford Bicentennial Trophy continues to create interest! It may not be generally realised that the only ALARA contacts not counted for the Trophy are those made on the official 80 metre net on Monday evenings. Contacts on any other net, contest, etc, may be counted towards this trophy.

The ALARA Contest in November would be a good time to look for contacts. Hopefully, propagation will be good and some of our DX members will be heard at this time.

ALARA members are mostly active on YL Activity Day, the sixth of each month, and often on other YL nets, including 21 203 MHz, Wednesdays, 0600 UTC; 21 188 MHz, Fridays, 0400 UTC; 14 148 MHz, Fridays, 0500 UTC; and the 222 YL Net on Mondays, 0600 UTC on 14.222 MHz.

BITS AND PIECES

Our Birthday Activity Day was held on July 23, with some interesting Bicentennial call signs on air. President Marilyn VK3DMS, had the call sign V188WIA, and Val VK4VR, was using V188QLD.

On June 14, a presentation of books was made to Walford School, in Adelaide in appreciation of their assistance with the ALARA-meet held last September.

The next ALARA-meet will be held in Dubbo in September 1990.

Poppy VK6YF, was fortunate enough to have several contacts with Gwen VK3DYLW. Gwen apparently has been having a marvelous time in the USA.

Mavis VK3KS, will operate V.88WIA during the ALARA Contest in November.

Marie VK2NKN, is now VK8NKN, and living in Katherine, NT.

AWARD UPDATE

No 139, to Bron Brown VK3DYF on April 13. One endorsement sticker and one bicentennial sticker.

That's it for this month.

7/3/91 Joy VK2EBX



BICENTENNIAL CALL BOOK ENTRIES

Those amateurs who wish to have their name and/or address deleted from details to be printed, are advised that they may make such a request in writing to the Federal Office, setting out what they wish to have suppressed. Any such requests must be received by the Federal Office on or before August 31, 1988. Write to: Call Book Details, PO Box 300, Caulfield South, Vic. 3161.

SOLUTION MORSEWORD 18

Across 1 dux 2 vow 3 real 4 fade 5 sawn 6 vast 7 gape 8 Texan 9 this 10 rents
Down 1 bug 2 fix 3 steel 4 airs 5 aura 6 once 7 Manx 8 urge 9 raid 10 gibe

	1	2	3	4	5	6	7	8	9	10
1	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-



Zdena Vondrakova OK2BBI.

1988/89 OFFICE BEARERS

At the Annual General Meeting, held on May 23, the following Office Bearers were elected.

President Marilyn VK3DMS

Immediate Past President Helene VK7HD

Vice-President Jenny VK5ANW

Secretary Maria VK5BMT

Co-ordinator Val VK4VR

Treasurer Meg VK5AOV

Minute Secretary Joy VK2EBX

Publicity Mavis VK3KS

Awards Custodian Marlene VK3JAW

and Historian K M VK3CYL

Contest Manager Gwen VK3DYL

Librarian Bron VK3DYF

Sponsorship Secretary

Newsletter Editor

STATE REPRESENTATIVES

VK1/2 Joy VK2EBX

VK3 Bron VK3DYF

VK4 Josie VK4YG

VK5/8 Maria VK5BMT

VK6 Bev VK6OE

VK7 Helene VK7HD

Our thanks to retiring committee members,

Margaret VK4AOE and Bobbie VK2PXS, for their

services to ALARA over many years.

VIRGIL

On May 30-31, VK? ALARA members operated the

call sign V188NSW. Those who participated en-

joyed it very much, although Heather VK2HD was

troubled by thunder storms during part of her

operating time, necessitating "shutting up shop"

for a while.

I began slowly on Monday, 30th with virtually no

propagation on 20 metres, but things improved



Electro-Magnetic Compatibility Report

Hans Ruckert VK2AOU

FAR REPORTER

25 Beechle Road, Beverly Hills, NSW 2209

COMMENT The average citizen knows next to nothing about the duties and rights of licensed transmitter operators, the radio inspectors, the users of electronic entertainment equipment, or the manufacturers and associated EMC problems. While at radio amateurs can gain first hand experience as transmitter and receiver operators and users of all types of electronic equipment as well as the WIA efforts on EMC standards and EMC reports, it is left to the newspapers and the popular electronic magazines to make the public aware of EMC problems, and who is responsible, it is gratifying to see that at least the West German magazine *Funkschau* has undertaken in the past, and more recently (Nos 18 and 17, 1986) to educate the public on EMC problems and amateur radio.

[The writer appreciates the permission of the *Funkschau* Editor of Franz Verlag, Munich to use the publication for an EMC report]

PART 1: TROUBLE WITH HI FI, TV, and EQUIPMENT?

by Arno Weidmann DL9AH

"The legal position, when disturbances occur — tips to overcome disagreements"

Translated from *Funkschau* Magazine, Germany by Hans Ruckert VK2AOU

Stripes on the television screen — cracking sound reproduction — flickering video picture — even peaceful citizens get hostile when they experience these (BCI and TVI) disturbances. The apparently responsible person is easily found, if a radio amateur happens to live near by. The following explanation shows that the radio amateur is rarely to be blamed, how the lawmaker judges these cases, and how the 'disturbance' can be overcome.

A 'radio amateur' is a person, who deals with electronic receiver and transmitter operation only for personal interest. This is the definition in paragraph one of the Amateur Radio Law (AFuG). Radio amateurs are found in all countries of the globe and they are mainly technically motivated persons, who are fascinated by electronics, and who wish to improve their practical experience and theoretical knowledge. One finds, among the radio amateurs, a substantial number of electronic experts, who look for a technical field as their hobby.

It is a sign of competence if a professional electronics engineer is also a radio amateur. It is therefore not surprising that a large number of this group is to be found in leading positions of all electrotechnical fields of commerce, research, teaching, etc. The Amateur Radio Law is additionally the only legal foundation for private scientific experimental wireless communication.

The importance of amateur radio has been underlined by the lawmakers in West Germany by the Law on Amateur Radio of March 14, 1949. It is a "lex specialis" (Special Law) and so pre-empted the general law on Radio Communication (FAG) and it includes a general right for all citizens, as long as they fulfill the entrance conditions.

A REVIEW OF THE LEGAL BACKGROUND

It was intended to underline the special status of the AFuG. Any form of political intervention, commerce and industry was to be excluded, and a separation of amateur radio from the international organisation (IARU) was to be prevented. This is also the reason why the AFuG states specifically

its relation to the world communication treaty of Atlantic City (1947). The amateur radio law makes it a duty of the Federal Minister for Postal Services in paragraph seven to issue the necessary regulations for the operation of the law on amateur radio.

The preamble to the law (891/1949) states further: Regulation for the licensing and control of radio services: This office (German Federal Post Office) is obliged to adhere to the regulations of the International Telecommunication Conference of Atlantic City (1947) and later additions. These regulations and additions are found in Regulation-Funk (VO-Funk) [5. Chapter 32 states that all radio transmitter regulations are also applicable to amateur radio operators. This means that all transmitter services are only responsible for interference between other transmitter services.

The regulation VO-Funk defines the term "interference" under "common use of frequencies" No 160, paragraph 1 (1982) as follows, having become national law by ratification of International Telecommunication Agreement, 7.1 Interference: The appearance of unwanted energy at a receiver of a radio system, — And interference is not caused between radio services operating on different frequencies, and not by the unwanted and permitted fundamental frequency signals. Only unwanted energy classed as harmonics, spurious emissions and intermodulation products, etc, cause interference (BCI and TVI).

Should the radio disturbance measuring service of the German Post Office determine that a collision is caused by "unwanted energy" the operator of the amateur radio transmitter has to improve his deficient transmitter, in the same way as all other transmitter services listed in VO-Funk. The transmitter operator has to comply within a reasonable time limit. Otherwise he will face restriction of operation, which is a justified step in order to protect the operator of a good communication station from a deficient one. The position is totally different if an operator of a "clean" transmitter signal is involved in a collision. It is legally not a case of an "interference", but a "Disturbance", if the collision is caused by a design feature or a deficiency of a Hi Fi or television receiver, etc. This is valid for all communication services and includes according to the will of the lawmaker (AFuG), specifically the amateur radio service. The term "Disturbance" is actually not mentioned in the VO-Funk regulations of the International Telecommunication Treaty (legally binding for all radio services), nor in the regulations to the amateur radio law. The operator of a licensed, correctly operated transmitter cannot therefore be charged with a disturbance. This is because he did not cause the collision, nor is he responsible for badly designed and deficient equipment in his neighbourhood. The owner of the deficient receiver, etc, which causes the collision, has himself to see that his equipment is no longer affected. There are a number of laws to his aid, including the law of Manufacturer Liability.

Electronic receivers with the appropriate FTZ Number (approval), which also qualify for the recommendation of the German Post Office, are a good standard for comparison when purchasing. The FTZ Number (DOC Test Number) of electronic entertainment equipment is of no legal importance to the operator of a licensed, correctly operated transmitter. The radio station at Langenberg does not stop transmitting if a VCR with a FTZ Number is disturbed in a person's living room.

Don't be frightened. This legal position has not changed since 1949. The citizen (radio amateur) has the right to raise an objection, should a disturbance report or a misunderstood regulation caused an operation limitation to be imposed. The objection may comprise only two sentences, which have according to §80 of the regulation a deferring effect of four weeks or 12 months.

The citizen has the right to be heard. The citizen must be permitted to see the charge documents. The authority has the legal obligation to state the claim, and to state the measure of the legally imposed operation restriction.

The author is of the opinion that one should oppose any unlawfully imposed operating restrictions, thus fighting for the right of a citizen who is not to be blamed. Even though protected by Federal Government Law, the amateur radio operating citizen should offer assistance to resolve a collision case at an early stage to avoid a court of law confrontation. Willingness to assist indicates a desire to maintain the neighbourly peace. The radio amateur should declare his willingness by trying to fix the fault — as far as possible, independent of any legal obligation to overcome the disturbance. The cost is usually small and is balanced by the learning benefit. The Federal Minister for Post and Communication issued a definition of the three cases of passive immunity of Hi Fi and television receivers against disturbances.

There are three possible ways for a radio disturbance to enter a television set. They can appear singularly, mixed or all three at the same time. The possibilities to overcome the disturbances are now indicated by the following examples.

In Figure 4 the television chassis picks up 1) re-radiated RF field of a house (shaded area) 2) Radiation picked up by the television antenna and the braud of the feeder (and perhaps any mislead preamplifier) 3) Unwanted RF radiation conducted into the television set by the mains cable wires and cables from connected equipment (turntable, speakers, Hi Fi tuner and amplifier, tape recorder and VCR etc).

IMMUNITY (passive behaviour)

The immunity (ability to reject a disturbance) of a Hi Fi or television receiver is the ability to maintain a predetermined level and ratio of wanted to unwanted RF signal strength when both signals appear at the same time. Foreign signals are RF signals which appear besides a wanted tuned signal.

FRONT END IMMUNITY determines the ability to reject unwanted signals appearing at the receiver antenna terminal.

CONDUCTED CURRENT IMMUNITY determines the ability to reject unwanted signals, which could enter via connected cables and attached equipment.

RADIATION IMMUNITY determines the ability to reject unwanted RF radiation picked up by the equipment chassis, printed circuit boards, wires, components, etc (FTZ (the same as our DOTC) measuring instruction 17 MV).

INADEQUATE CONDUCTED CURRENT IMMUNITY receives priority attention in disturbance investigations. This is not only so for receivers but also for turntables, electronic organs, telephone answering recorders, computers, etc. One has to look at a house (as if with X-rays) from a distance to appreciate the conducted current effect. The house appears as a complicated cable and pipe network, if we now consider only all metal objects.

This includes all pipes and the central heating systems, the lightning conductor, gutters, community antenna and all the mains house wiring, etc. Sections of all these metallic house installations may form resonances individually or via connected equipment. In Figure 4 a current, similar to one in a transmitter antenna, could flow in the television antenna if a piece of 220 volts mains cable (could be considered as a one core lead) resonates together with the feeding plus aerial at the operating frequency of a nearby shortwave transmitter. This form of outside radiated current goes through the attached television set, etc. the chassis PCB tracks (often now not earthed) now carry RF and the front and semiconductors become overloaded and operate non-linearly, generating harmonics selected by the tuned elements of the tuner, which could fall on television channels, causing a disturbance. Figure 5 shows disturbance current between PCB chassis track points. The manufacturer is responsible for this fault. One possibility manufacturers could use to avoid the disturbance would be to divert the unwanted current around the electronic stages and components. Figure 6 indicates one could prevent the unwanted current from flowing through the sensitive electronic components by diverting the current via the (necessary in any case) bypass capacitors using the shortest possible path between the mains wires and the feeder braid. It is necessary to let the mains cable enter the television set very close to the antenna terminal. Such a measure would not cost one cent. If the manufacturers tried to save a few cents, by leaving out the necessary mains decoupling capacitors, even though it has been standard practice for 50 years, then unavoidably one must "Do now, what should have been done during manufacture".

The use of high impedance RF resistors in the mains and antenna lines is one further method to avoid unwanted conducted currents from reaching the receiver. A simple bifilar wound mains choke often works wonders, consisting of 30 to 50 turns of $2 \times 0.5 \text{ mm}^2$ cable. It can be wound on an old ferrite television line transformer core. Figure 7 shows effective "conducted current" chokes (E-Dr) wound on various ferrite cores. They are simply inserted between cables and equipment, having plugs and sockets attached.

Ferrite cores are often obtainable from a television workshop. Defective line transformers are usually thrown away. Other ferrite shapes may, of course, also be used like antenna rods, ring cores, etc. The resulting inductances between mains wall socket and appliance should be as large as possible (at least 100 μH , $X_L = 2.3 \text{ kohm}$ for the 80 metre band). An additional unwanted signal rejecting choke may have to be placed between the

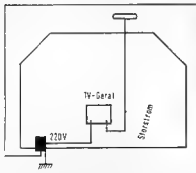


Figure 4: Diagram of house installation. Accidental resonances between metal parts can reinforce the interference field.

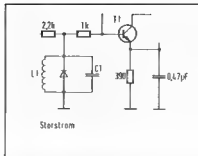


Figure 5: Interference current between earth connections. A design fault for which the manufacturer is responsible.

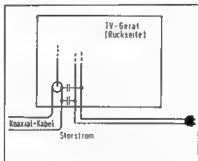


Figure 6: Ideal bypassing of interference current against entry to device. A constructive measure which costs the manufacturer nothing.

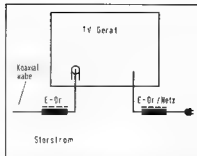


Figure 8: Effective decoupling between mains and antenna cables by using "E-Dr" chokes in both cables.

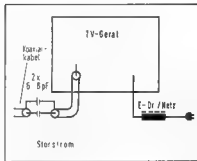


Figure 9: Interference minimisation for UHF. The coupling capacitors can easily be inserted.



Figure 7: Effective "conducted current" chokes (E-Dr) wound on various ferrite cores. Equally effective for mains lines and antenna feeders, as well as for audio and video cables. Having plugs and sockets attached, they are simply inserted in the appropriate lines.

antenna and antenna terminal of the receiver, if the mains line choke did not help enough. Wind 30 to 50 turns of thin coaxial cable as described above on a ferrite core, equipped with male and female plugs. Figure 8 shows effective decoupling between mains and antenna cables, by using (E-Dr) RF chokes in both cables. The aim of these measures is to place a television set high as far as

RF is concerned" between both cables for the unwanted current. There are other possibilities also available on the antenna side. The desired high RF impedance can also be obtained with capacitors. This is achieved with a "RF separation transformer" using the lowest possible winding capacitance between primary and secondary side. This means a effective but costly (20 DM per piece). The insertion loss increases above 700 MHz, where the third television program is usually found. The writer used a cheaper way with good results avoiding any further attenuation of the usually weak third program signal. The television feedline is cut about 20 centimetres from the antenna terminal, and the centre lead as well as the braid are reconnected via two 5-8 pF capacitors (see Figure 9). Practical considerations recommend the use of appropriate plugs and sockets to obtain a plug-in unit.



Awards

Ken Hall VK5AKJ

FEDERAL AWARDS MANAGER
St George's Rectory, Alberton, SA 5014

AWARDS ISSUED IN MAY

WAWKCA

- 1589 Toshiko Ino JH6JTE
- 1590 W A Ricallton G4ADD
- 1591 Neil Trotter VK3CNT
- 1592 William R Tapott WOZV (on 160 metres)
- 1593 Mchyuiki Kikuhara JA1EPL
- 1594 Yaguchev DG JA3EGP
- 1595 Vitaly Besedin UA5AJT
- 1596 Emil Luft UL7PEN
- 1597 Borisov Ivan P UA4ABY
- 1598 Anatoly Tatarinov UA0ZBP
- 1599 Alexandr F Soldatenko UQ2GP
- 1600 Bogachev DG UA4HGL
- 1601 Alexandr V Norikov UA0ZDN
- 1602 Yakuchev SA UA3CHZ
- 1603 Donetsky Club Station UB4IXZ

HAWKCA

- 138 Victor Kostuk UC2-006-1
- 139 Vinucov IW UA9-145-530
- 140 Serge V Stikhin UA9-154-5
- 141 Terimih Vlad UA0-103-70

UKCA PRIZES

- 364 Ken Galt VK3AJU
- 365 Steve Jenkinson VK3YH

UKCA UPDATES MAY

- VK2AKP 284/286 phone and open
- VK2AKP 117 CW
- VK2QL 312/355 CW
- VK3DP 215 open
- VK3MS 318/365 phone
- VK6AJW 292/304 phone
- VK6LK 313/330 phone
- VK6MK 318/361 phone and open
- VK6RU 317/368 phone and open

OAA 1000 ODENSE ANNIVERSARY AWARD

On the occasion of the 1000 years jubilee of Odense, Denmark, the Odense Radio Club (a division of the Experimental Danish Radioamateurs) has sponsored the OAA 1000 Award.

The award is issued for contacts with one of the club stations, OZ1000, OZ3FYN or OZ5HCA and with other stations whose QTH is in the town of Odense, Denmark.

The award is issued for all-mode and all-band contacts without special stickers. Only contact between January 1, 1968 and December 31, 1968, will be eligible for this award.

Minimum report to count for the award is 33/9.

DX stations require five points.

Contacts with OZ1000 count five points. OZ3FYN and OZ5HCA count two points. Contacts with other stations located in Odense count as one point.

The special call station of the Hans Christian Andersen town, OZ5HCA, was only active from July 10, 1968 to July 17, 1968.

Each call only counts once on each band.

The award is also available to SWLs.

Send a copy of your log together with a fee of DKR 30.00, SÜSS or 10 IRCs to EDR Odense Division, DK 5100 Odense C, Denmark. Applications to be postmarked no later than March 31, 1969.

ROTTERDAM AWARD

In 1987, the Rotterdam Award, which is issued by the Electronica Club Rotterdam (ECR), celebrated its 10th anniversary. Due to this occasion, radio amateurs and SWLs were able to apply for the award with a special sticker attached.

Due to the great demand and enthusiasm the award created, the ECR has decided to issue the award permanently, minus the special sticker (The special 1987 award is still available until January 1, 1989 for those with enough points).

Non-European stations require three points.

The points can be collected as follows:

Every member of the ECR, SWL as well as radio amateur, counts as one point on every band. PI4RDM and PI4RDM/A, the club station, counts as three points on all bands.

The award can be worked mixed and there are no frequency or mode restrictions. However, repeater contacts are not valid. During every QSO which is being made by a member of the ECR, the counter-station will be informed of his membership and validity for the Rotterdam Award.

The award costs f1 10 (10 Dutch Guilders) or 10 IRCs. Send list of contacts, signed by two other radio amateurs to: ECR, PO Box 22160, NL-3003 DD, Rotterdam, The Netherlands.

Members of the ECR: PAs OEKR, 3CCA, 3CLP, 3CMQ, 3DHW, 3DPR, 3DUF, 3EXM, PEs OAGZ, OED, OMFK, OMLR, OMOT, OMNI, PEs 1DVH, 1DZR, 1FUM, 1IFP, 1KJS, 1KPL, 1LGD, 1LLA, 1LOS, 1MEL, 1PIARDM, and 1L4OIBM.

Each SWL report which is sent by a SWL of ECR also counts for the Award.

WHAT IS 16K0F3E7 ?

There were only five basic modes of emission in the 1950s. These were designated A1 for CW, A2 modulated CW, A3 phone, A4 facsimile and A5 television.

But, by the 1970s the list had grown to 14, ranging from A0 unmodulated carrier, to P for pulse transmissions.

Things became more complicated when, at the 1979 World Administrative Radio Conference, almost 1300 different emission modes were identified.

In January 1982, the International Telecommunications Union introduced a new method of designating emissions.

Those who have read the recently issued DOTC brochure DOTC71 'Licence conditions and regulations applicable to the Amateur Service' will have seen it contains many ITU designators.

But what do the designators mean? You may well ask! The answer is to be found in AR magazine, September 1981, where an explanation is on pages 26-28.

You will need to refer to that article to interpret the modes in DOTC71 and know which ones are available for your licence grade.

DOTC says the ITU designators will be included in the regulations examination question bank later this year.

SO! What IS 16K0F3E7?

The first four characters are the bandwidth, with 16K0 meaning 16 kHz. F3E is FM telephony.

MALYJ VYSOTSKIJ

No I cannot pronounce it either, but it was the home of the signals originating from 4J1FS, with Marti OH2BH, in the group. Marti feels that it will be a new country, and really who doubts Marti's good word and standing in the amateur fraternity?

I was alerted to the presence of this rare prefix by an ISO call from the happy duo from Dorset, Ken G3NBC and his wife Kitty, who worked extremely hard to obtain her full call to compete with Ken on the bands. It has been said that since Kitty obtained her licence the power account has tripled, but one cannot believe everything they hear of course.

Ken and Kitty in their shack with the WIA Membership Certificate proudly mounted on the wall.

Ken G3NBC was the first G residing in England to become a member of the Wireless Institute of Australia. He is an avid DXer and was a great source of assistance to me when I was writing 'How's DX', as was Kitty.

Congratulations to you both on what we hope will be a new country and what about an article from you on what it is like to amongst the real ORMs, when one is trying to work that rare 'one' or have a sched with someone down under.

Congratulations to the lucky people with 4J1FS in the log, QSL to Marti OH2BH, and let us all hope he can convince Don Search on the ARRL DXCC Desk, that Malyj Vysotskij Island is really a new country.

Contributed by Ken McLachlan VK3AH.





Listening Around

Joe Baker VK2BJX
Box 2121, Mildura, Vic. 3500

It's a long time since the last column, so today being very overcast (Sunday, May 15), I thought I had better do something about it. Particularly since I've had many "on air" requests asking why? I suppose it's been due to personal problems and wrestling with the technicalities of large television sets which I am beginning to hate. Why do people even bother to buy large and heavy televisions when small sets like mine which can be easily fitted in one hand, can do the task equally well. Then again, I could probably say, why did people in other days buy those heavyweight radiograms? Anyway, because of the dollar situation, I've got to take whatever work a brought to me, and try to keep the owners happy.

On this overcast Sunday, I am sitting here with this typewriter propped up on a newly acquired card table. Alongside me on another table is the Kraco CB set which I bought in July 1977 when the CB craze faded. A year or so before I decided that amateur radio might have something better to offer than CB radio at that time. Another reason for using the Kraco "crackbox" now is because of

troubles with my main transceiver, which I am determined to get back on the air. The Kraco, of course, was converted from 27 MHz to 26 MHz a long time ago and it's proved to be a wonderful standby set without which I would be off the air altogether.

Over the years that I've been involved with radio, I thought I have heard just about everything — the odd things that people say. But I think what follows just about "takes the cake". I just heard a JA called Hide tell a VK5 that he (the VK5) was "one point five kilometres off frequency".

Since I last wrote *Listening Around* I went to Melbourne. Trips to Melbourne are always full of surprises for me. Last time it was meeting with Bruce VK3JAX, of Sandringham. Bruce is a computer expert from America and will be spending a couple of years in Melbourne involved with computers.

Prior to visiting Melbourne I had been speaking to Bruce about a D104 Astatic microphone which I had acquired soon after World War II and used with a home-brew valve amplifier on a PA system. I told Bruce about how I liked the D104 and how I used to amplify the ticking of a kitchen clock to test its qualities. On one occasion I said to Bruce "I wish I had one of those microphones right now". (I bought mine in Sydney for about six pounds in 1947). Bruce said he thought he could get me one sent out from the US. Of course, I was very pleased but forgot about it until the visit to Melbourne, when I made contact with Bruce late one night on my two metre F208 from my motel room. Bruce said "Remember talking to me about the D104 a while back?" Of course I did. Bruce then said he had a D104 which he would like to give to me and asked me when I was due to get the train back to Mildura. "In the morning," I said. "Well," Bruce said, "I could bring the microphone to you right now, by car. And so, despite the late hour (it was nearly midnight), I called the desk and told them I was expecting a visitor and could they let me know when he arrived?

In due course, the phone rang — I went down and met Bruce in the foyer. Bruce was glad to meet someone so far off a voice from his radio, and there carefully packed in a cardboard box was the beloved D104 microphone. He explained that he hadn't got this one from the US just for me, but it happened to be a spare microphone which he was not using. So, here it is sitting upright on this card table right alongside this typewriter — and it's all nice and shiny — just like the original D104 which I had all those years ago — long before I got my licence. Ah well, that's what amateur radio is all about — helping one another — and I'm doubly grateful to Bruce for bringing me the D104 at that very late hour.

On that trip to Melbourne I met Graeme Parssons — a shortwave listener and ex-Tasmanian who lives in a tall mansion called Gordon House in South Melbourne. Graeme took me right to the top of his 10 story penthouse from which he gets a wonderful view over Melbourne, and which is almost alongside the old ship *Polytechnic*.

In fact, if you look out the window in Graeme's room, you look down onto the masts of the *Polytechnic* at Melbourne's maritime museum. I told Graeme that when, and if, he goes for an amateur licence, he'd have a wonderful take-off point from his top floor. I always know when Graeme is listening to some of us night-owls because he gives me a pre-arranged tinkle on the 600 ohm line. I am beginning to think that it might be as difficult to get Graeme to try for his licence as it was for me to

persuade another phone-liner and good friend of mine from my Broken Hill days. Alas, Reg Goding of Broken Hill has never bothered to get one, although he was very clever with electronics.

The antenna which I am using to monitor 21 MHz right now is a converted CB "Ringo" which I just happened to have in the shed. I bought it from a Mildura amateur some years ago and it sat in the shed so long that I got tired of seeing it, so decided to put it to work with the 11-year-old converted Kraco De Luxe. Getting the SWR ship-shape took a little time, but the Ringo is working now reasonably satisfactorily and 12 watts or so is getting me into JA, ZL and Western Australia. It would be nice to have more elaborate antennas but I have to use what I have.

As a result of my articles about Morotai Island during the war years, I received a set of black and white photographs from a Queensland amateur who was in the RAAF on Morotai at the same time as I was there. He was a driver and sent me his original RAAF transport driver's licence issued to him on Morotai. He gave me the photographs but at his request, I returned the special Morotai licence after having it photocopied. He had been on Morotai at the time of the surrender to General Blamey, at the special parade of September 9 1945. Among the photographs was one showing nine high-ranking officers handing over their swords as they signed the surrender document. I saw this incident as it was happening.

There were many hundreds of American and Indian soldiers as well as Australian members of the women's services present at this ceremony which was broadcast on the island by an American Forces station called WVTL from their portable Outside Broadcast (OB) van.

WVTL was on the air a short time before the Australian Amenities station 9AD (on which I later worked). The former RAAF driver asked me not to mention his name in this column. Among the photographs was one of a native village (Nica) on Morotai. I never knew of its existence or of the Morotai War Cemetery. One photograph shows two of his RAAF mates standing guard at the entrance to the Cemetery. All this shows that the beetle-shaped island had areas which we were probably not allowed to see. I spent most of my time in the Peninsula, which jutted out into the China Sea. Here were the Army newspaper *Table Tops* and 9AD Morotai, on which I served. Anyone who served on Morotai may also remember the open-air Boomerang Theatre, where we used to have to sit on boxes or kerosene tins equipped with our gas capes in case it rained, water bottles in case we felt thirsty (we were only two and a half degrees north of the Equator) and well sprayed with citronella to protect us from getting eaten alive by the malaria-carrying mosquitoes.

Those who served on Morotai may also remember the open air theatres run by the American Army. There were many of these. Before their main film came on they had a special news service read from the projection box, which helped keep us in touch with things in other parts of the world.

A few days ago, on 80 metres, I worked another amateur who had served on Morotai. He said he would send me photocopies of the Army newspaper *Table Tops*. I will appreciate these for I now have only one copy of *Table Tops*, that of August 15, 1945, with the banner headline in red lettering "It's All Over". I originally brought back four copies of this issue with me. Three were foolishly given away, after the RSL in Mildura said they didn't want them.



In the telecommunications network which now almost encircles Australia, Mildura is an important link. This photograph shows the Telecom microwave antenna mast (there were 13 dishes at my last column) above the Telecom Building, in Langtree Avenue. These circuits connect much of the traffic passing from eastern States to the west, taking some of the load that would otherwise be routed via Melbourne.

Since people are not interested in these things these days, it's now up to me to preserve that one remaining copy, also the manuscript of my trip from the Northern Territory containing names of some soldiers who were with me. Also, I have a booklet called *Manual of Air Navigation* which was issued to members of the RAAF who were serving in England — on bombing raids over Germany. This manual also contains names of crew members, logs and navigational details of what took place. I was not in the RAAF but have had that book for so long now that I can't remember where I got it. What I contains is surely the history of those, even the reports on weather they encountered over the English Channel.

This particular book was printed at a time when there was a great shortage of paper and throughout the book, lines are drawn in red ink where some material has been cancelled, while elsewhere slips of paper containing corrected sentences are pasted over the original.

Now that winter is here, I hope to spend more time at this typewriter. I have lots more which I hope you will find interesting. In the meantime, if any readers would like to chat to me on air you will find me around 3.585 MHz somewhere on the end of the Cocktail Net. And, if you hear nothing on that frequency in the wee small hours I may be listening. I sometimes leave my set running on or near that frequency when a more sensible people are tucked up in bed. But that's not to say that I'm an insomniac — I'm not — I get plenty of sleep but as I'm a service pensioner aged 71, and my time is my own, I can sleep when I like! But if you wake from your slumber and would like someone to chat to, why not fire up around the above frequency? 73 till next time,

Joe VK2BJX

MORSEWORD 18

Audrey Ryan

30 Starling Street, Montmorency, Vic. 3094

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ACROSS

- Top of the school
- Oath
- Genuine
- Loose colour
- Cur
- Immensely
- Stare with open mouth
- He's from Dallas
- Not that
- Sits

ACROSS

- Insert
- Predicament
- Metal
- Pretextations
- Emanation
- Previously
- Tail-less cat
- Egg on
- An attack
- Scoff

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Solution page 46. . .

Coaxial Cable Specials

Low Loss VHF/UHF Cables

Description	Trade & U.L. Type Number	AWG (Stranding) Dia. in. Nom. D.C.R.	Insulation & Nominal Core O.D. Inch mm	No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance pF/ft. pF/m	Nominal Attenuation dB/100 ft. dB/100 m
9913 80C	9 (21 Solid) 106 bare copper 9061 M 2.9511 km	Semi-solid Poly-ethylene 285 7.24	Duobond II* • 88% tinned copper braid 1.911 M 6.011 km 100% shield coverage	50	84%	24	78.7	50 0.9 3.0 100 1.4 4.6 200 1.8 5.9 400 2.6 8.5 700 3.6 11.8 900 4.2 13.8 1000 4.5 14.8 4000 11.0 38.1
				Black PVC jacket				

BELDEN 9913 low-loss VHF/UHF coaxial cable is designed to fill the gap between RG8 to RG213 coaxial cables and half-inch semi-rigid coaxial cable. Although it has the same outside diameter as RG8, it has substantially lower loss, therefore providing a low cost alternative to hard line coaxial cable. Price per metre from Acme Electronics is only \$5.10.

BELDEN Broadcast Cable 6267 — RG213 to M.C. 17D is only \$5.24 per metre while BELDEN Commercial Vers on RG213 — YR2385 is \$2.25 per metre. Prices do not include Sales Tax. Also available from Dick Smith Electronics.

Coaxial Cables

Description	Trade & U.L. Type Number	AWG (Stranding) Dia. in. Nom. D.C.R.	Insulation & Nominal Core O.D. Inch mm	No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance pF/ft. pF/m	Nominal Attenuation dB/100 ft. dB/100 m
8267 % 1354 60C	13 (7x21) 069 bare copper 1.6711 M 6.111 km	Poly-ethylene 285 7.24	Bare copper 1.201 M 3.801 km 97% shield coverage	50	86%	30 B	101.0	50 1.6 5.2 100 2.2 7.2 200 3.2 10.5 400 4.7 15.1 700 6.9 22.6 900 8.0 26.3 1000 8.9 29.2 4000 21.5 70.5
RG-213 U MIL-C-17D				Black non-contaminating PVC jacket.				



ACME Electronics

205 Middleborough Rd. Ph (03) 880 0900
Box H Vic. 3128 Fax (03) 899 0819

SYDNEY (02) 644 2533
ADELAIDE (08) 211 8499
BRISBANE (07) 454 1911
LAUNCESTON (0800) 31 5545
DARWIN (0818) 81 5411
PERTH (08) 272 7322
HOBART (002) 34 2811

1988/07/01

Club Corner

SHEPPARTON AND DISTRICT AMATEUR RADIO CLUB INC

The Shepparton and District Amateur Radio Club hold its annual Communications Day on Sunday, September 18, 1988. This event has drawn large crowds in previous years and the club expects a similar result this time.

It is anticipated a number of major dealers will be attending from Australia have already indicated they will be there. The futuristic Icom IC-7B1, which was reviewed a last month AR, will be just one of that company's latest offerings on display. This model was so desired by someone in Sydney that he stole it from a reviewer.

The event draws radio amateurs and communications enthusiasts from throughout Victoria and southern New South Wales.

If you have ever wanted to find out more about amateur radio, shortwave listening, digital communications or anything electronic, you will be made most welcome.

Dealers or other groups who have not participated in previous events, but would like to be involved should contact the club immediately. Space is limited and indications of interest have already been received.

For more details contact the Shepparton and District Amateur Radio Club Inc, PO Box 692, Shepparton, Vic. 3630, or Peter O'Keefe VK3YF on phone (056) 21 6070.

—Contributed by Peter O'Keefe VK3YF

COLAC AMATEUR RADIO CLUB — VK3CRC

Communications in Difficult Areas

The Cape Otway National Park nestles between the sea and the main ridge of the Otway Ranges. Over a distance of some 10 kilometres "as the crow flies" they rise from sea level to an elevation of some 680 metres. The northern slopes then fall to an elevation of around 60 metres at the township of Gellibrand then rise again on another ridge to around 280 metres before levelling out on the plains around Colac, which is at an elevation of about 130 metres.

The Park is in a fire prone area, consisting as it does, in the main, of a dense blue gum forest with its associated undergrowth. The section between the sea and Colac is a difficult one for communications. It is greatly under-served for telecommunication, with some firms running coaxial cable for distances of almost a kilometre and inserting boosters in the cable to obtain indifferent television reception.

It was with these considerations in mind that the Colac Amateur Radio Club decided to run some tests to confirm, or otherwise, that reliable communication between the southern fringe of the Park and Colac could be established. This would be vital in the event of a serious fire in the Park.

Accordingly, VK3s XGR, PCM and XJW set up a station on Mount Chapple, at Wyelangta, using 146.500 MHz and HF frequencies.

VK3 TCE and 3KJ set up another station on the southern fringe of the Park, also using 146.500, 7.150 and 3.600 MHz. VK3s DFI and YZZ maintained a watch on all frequencies in Colac.

Results were as follows:

146.500 MHz. Communication between the Park location and Wyelangta were okay using hand-helds, although higher power was also used. Also, Wyelangta could work into Colac as well as being able to access repeaters on Mounts William, Buninyong, Macedon and Anaki, as well as the Warramboul repeater.

7.150 and 3.600 MHz: Although inferior to a set-up using Wyelangta as net control on 146.500, VK3TCE and VK3KJ could work directly into Colac on both frequencies.

CONCLUSION

In the event of WICEN being called on to provide emergency communication, the 146.500 set-up could be regarded as 100 percent reliable, particularly with repeater backup. The HF frequencies would be useful as backups in the event of the set-up at Wyelangta being itself threatened by fire.

Contributed by Dudley Stalker VK3KJ

VK4 DISABLED PERSONS RADIO CLUB — VK4BTB

The VK4 Disabled Persons Radio Club will celebrate the Fifth Anniversary of its opening on Sunday, August 28, 1988.

The Club Station will be on-air from 10 am until 4 pm local time. This period is likely to be extended according to the availability of willing operators, but will be off-air from approximately 2 pm until 2.30 pm as the formal part of the day will take place at this time.

Intended frequencies are 3.590, 7.090, 14.190, 21.190 and 28.490 MHz, as dictated by time-conditions.

Best wishes from VK4BTB and we look forward to working you on the day.

—Contributed by Riley Norgaard VK4AQR, Station Manager for VK4BTB

CAMBERWELL GRAMMAR SCHOOL RADIO CLUB — VK3BCG

Camberwell Grammar School Radio Club, VK3BCG, has always been a very active group but in the last three years the enthusiasm of all members has surpassed any previous year. Equipment has been purchased and antennas erected — a vertical for VHF and dipoles for HF work.

After a long hassle with the Camberwell City Council, a permit has been granted for a radio tower to be erected in the near future. Stimulated by their eagerness to extend their knowledge and by the high cost of manufactured equipment, much home-brewing is attempted, both in the club rooms and at home.

The radio field day contests, especially the John Moyle Memorial Field Day, create an enormous amount of enthusiastic activity, which was rewarded last year when the club gained first place in the D Section, 24 hour Section. (The club is now eagerly awaiting the 1988 results).

Each boy who is interested in becoming a radio amateur operator has to endure a three month trial period, to ensure he is really bitten by the "Radio Bug". He is required to study electronics and regulations in the first year of membership, and is endorsed by the school for the LAOCP examinations arranged by the DOTC, not later than one year after Club Membership is granted. The Club Rules have been successful because, from 1986 to 1988, the following students have obtained the licence:

Andrew Conway — VK3KKU (now ex-CGS student)

Simon Kay — VK3XSK (now ex-CGS student)

Graeme Callaghan — VK3TGC (now ex-CGS student)

Matthew Robinson — VK3TAY (Year 11)

Miles Tobias — VK3TNT (Year 11)

Ronald Kriese — VK3TCF (Year 11)

Christopher Hart — VK3TIT (Year 11)

David Phillips-Rees — VK3TDS (Year 10)

The next target will be the ACCP.

Parents have also become involved with amateur radio as, in May 1988, Frank Callaghan became VK3ZFC.

I wonder how many Amateur Radio School Clubs, in Victoria, or even Australia, can boast that all their members are licensed?

—Harry Lodder VK3AX, Club Leader, VK3BCG

QUEENSLAND AMATEUR RADIO DATA AND TELETYPE ASSOCIATION (INC)

The resignation of David Brownsey VK4AFA, as Secretary of the Queensland Amateur Radio Data and Teletype Association, was reluctantly accepted recently. His place has been taken by Don Thomson VK4YI.

—Contributed by Don Thomson VK4YI, Secretary

SUMMERLAND AMATEUR RADIO CLUB

During the North Coast floods in April, members of the Summerland Amateur Radio Club responded to requests for help from the State Emergency Services.

Camberwell Grammar Radio Club Members

from left: David VK3TDS, Chris VK3TIT, Harry VK3AX, Miles VK3TNT, Ron VK3TCF and Matthew VK3TAY



Normally coastal floods are fairly quick to rise, have a sharp peak and subside quickly. The entire event usually lasts for about three or four days from an operational viewpoint.

This flood, however, lasted almost two weeks and extended both the natural and organisational resources available. Richmond-Tweed Division SES became operational on Sunday, April 3. Steady rain had been falling for some days, longer than usual in the build up period.

As the rain increased the river rose steadily over two or three days creating a lower, but longer peak. Thus Lismore has a much less destructive peak but it held up for about two days. On the lower river as rates of flow decrease the huge volume of water catches up with itself and causes higher flood peaks than the nominal heights reached upstream would indicate.

Helicopters are an invaluable means of transport and rescue in a flood situation, especially once main roads become cut. They are not, however, without problems, particularly with radio in humid conditions. By Tuesday, both the local Cassino-SLSA Rescue helicopter and PoAir, which had come up from Sydney, were being grounded for periods by radio failure due to dampness.

There were also frequency non-compatibility problems between SES and PoAir. To overcome this the Police hand-helds and pack radios were set-up at Division Headquarters in Lismore. This headquarters is not a good radio site so a portable UHF repeater had been set up on Wednesday. At about 2330, the Division Communications Officer, Peter Mark VK2PFF contacted John Alcorn VK2JWA, on two metres with an early warning of a request for Thursday morning. Could the repeater be set up at the OTH of Leith Mar in VK2EA, who lives on a high part of Goonellabah, a suburb east of Lismore with a good path to Divisional Headquarters?

Next morning, after confirming with Leith, John picked up the equipment and took it to Leith's home where, with Lance Ferris VK2NVF, they set it up. It was a very good outfit based on the Philips 828, all built into a steel case about 600 mm in diameter. Either 12 volts or 240 volts powered it fed to either a UHF centre loaded mobile whip mounted on top, or by coaxial cable to a remote antenna. A vertical antenna and RG8 connecting cable were also part of the kit.

The repeater was set up in Leith's shack and the antenna put up on one of his pipe masts as high as the feeder allowed, for three metres above the roof. It was tested and running well by 0800 Thursday.

By Wednesday night, the SES signals staff were working very long and repeat shifts. We were asked if we could roster some of our members to the Communications Centre manning to ease the situation. We did this commencing on Thursday morning, and did eight hour around-the-clock shifts until 2200 hours Friday.

The work involved handling traffic on the Division Command Net and, when called on, the Local Command Net. Lesser traffic was also passed over the PoAir and Ambulance nets. Telex and Fax traffic was also processed, but unfortunately nearly all phone traffic went direct to the operations room where about 10 SES volunteers handled it.

By Friday, the rapid flowing upstream peaks moved downstream and slowed so that the urgency and need for 24 hour manning reduced. The helicopters could not work at night and food and fodder supply was not done at night. Thereafter, day shifts only were necessary. About 13 hours were worked Saturday and also on Sunday.

After this, SES reverted to its normal volunteers and work routine.

Nine members offered their services for this duty. They were: John VK2JWA, Leith VK2EA, Lance VK2NVF, Phil Evans VK2KEV, Jim Cunningham VK2ESI, Alex Chapple VK2BEV, Jim

Duncan Raymont VK2DLR, Ken Hore VK2YQB, Peter Richens VK2XHL. Others also offered, but were not called upon this time.

Meanwhile, another job had arisen. By Friday, the flood task had, in the mean, moved to the lower river between Coraki-Woodburn and Wardell. During short flooding, of two to three days, cattle (and people) can survive on little or no food. This had gone longer and was likely to continue for several more days causing stock losses and difficulties for stranded residents. As well as the three helicopters, the Army was also supplying transport.

Seven trucks from 41 Bn RNSWR and a truck and eight landing craft from the 23rd Field Engineers, Brisbane, totalling 40 people were involved transporting food and fodder around the lower river. This needed a separate radio net to keep their traffic off the existing nets. The PoAir UHF net was suitable but, to cover the lower river, it was necessary to move the repeater further south.

Forewarned, on Friday morning Leith VK2EA, dismantled the repeater and Harold White VK2AWH, assisted by John VK2JWA, re-established it at the Telecom tower in Goonellabah. Using an existing feeder, the antenna was mounted at the B Level near the top of the tower. The move had degraded the path to Divisional Headquarters so Peter VK2PFF and John VK2JWA, erected a vertical antenna, loaned by Harold VK2AWH, to improve the path.

On Sunday morning, reception through the repeater became difficult although the equipment tested out alright. Using a packet, John VK2JWA, assisted by Bill Parker VK2KDI, set up a manual relay at the King George V reservoir site. This is a high hill south of Lismore. This station operated for about two hours and was closed at 1136.

A VHF packet had been sent to the Fodder Base and, as traffic had eased on the Local Command Net, this was used. It was not until Sunday evening that it was discovered that the Fodder Base had moved its headquarters to new cover in a steel shed! Hence, the attenuation. Better radio location allowed the repeater to be used again.

Conditions were expected to ease on Monday but this was not to be. Another rain depression brought more heavy rain over the catchment causing rises during the afternoon with major flooding due for Lismore over Monday night. Again the club was asked to assist with signal staffing and around the clock rosters were begun at 1600 hours Monday.

This rostered staffing continued until 1200 hours on Thursday when again the situation eased allowing SES to revert to its normal staffing procedures. As well as former members, Peter Cornelius VK2XHD/G08BT and Scott Watson VK2XGM, were involved. Harold VK2AWH, dismantled the repeater on Thursday as it was no longer required.

In total, 12 Sumnerland Club members were involved in various tasks during the operation and logged up over 151 hours worked. This does not include six other club members who are also regular SES members. They are: Peter VK2PFF, Divisional Communications Officer, Duncan VK2DLR, Communications, Bill Cross VK2BCW, Lismore Floodboats, Gordon Campbell Officer, Graham Virtue VK2GJ, Communications Officer, Byron Shire, Ray Williams VK2ARW, Gauge Reader Pimlico.

Some of these members logged up huge hours and unusual jobs. Bill VK2BCW, had to ferry firemen to an electrical fire in a flooded house! Peter VK2PFF worked 161 hours over the two weeks.

This participation was considerable on the Club's part and showed again that skills kept up by amateurs are still available to the community when needed. This is one of the reasons often claimed by amateur organisations to justify the large

spectrum space we use. This reason alone made the participation worthwhile.

It must, however, be kept in perspective as part of an operation in which over 500 SES volunteers put in over 18,000 hours in the first week in the Richmond-Tweed area. Over 26,000 hours in the Clarence area for the flood. The Army's 40 men put in over 3000 hours, plus countless hours by Police, Government, Local Government and many other voluntary organisations.

It was, nevertheless, a necessary link in the chain and a valuable service and learning exercise. We were all glad to see the sun. Thanks again to all concerned.

Contributed by John Alcorn VK2JWA, Sumnerland Amateur Radio Club

HORNBSY AND DISTRICTS AMATEUR RADIO CLUB INC

The following members have recently been elected to the Council for 1988/89

President	John Jeffreys VK2CJF
Vice-President	Ray Fry VK2FFY
Secretary	David Friday VK2COZ
Treasurer	Karl Tomson VK2KKT
Publicity Officer	John Mar in VK2JJM
WIA Emergency Communications	Barry White VK2AAB
Library	David Friday VK2COZ
Morse Machine Repeater	Barry White VK2AAB
Education	John Lamacchia VK2BTL
QSL Publication	Tony Mar in VK2JJM
Sports Club Liaison Officer	Ted Davis VK2ZED
Club Net Controller	Keith Alder VK2AXN

Club meetings are held on the fourth Tuesday of each month at the Asquith Sports Club, Old Barrow Road, Hornsby (next to Storey Park).

Committee meetings are held on the second Friday after the general meeting at the Secretary's home. Visitors are welcome at these meetings.

The club net is held on Mondays. Club Station VK2MA, and other stations are active from 8 pm on 28.370 MHz and 147.250 MHz. All amateurs are welcome to join the net.

The Hornsby and Districts Amateur Radio Club two metre repeater operates with the call sign VK2RNS on 147.250 MHz. The two metre packet digipeater VK2RPH operates on 147.575 MHz, and Morse Beacon VK2RCW operates on 3.699 and 144.950 MHz.

—Contributed by David Friday VK2COZ, Secretary

NEW RADIO CLUB IN VICTORIA

The Healesville Amateur Radio Group has been formed following a meeting of local radio amateurs and those studying for the amateur licence.

Inaugural Club President is Graham Tremellon VK3TGP, who says the club will provide licence study facilities, and encourage home-brew construction among its members.

Anyone interested in joining local theory and Morse classes or the club should write to Graham Tremellon, PO Box 285, Healesville, Vic 3777.

PORT ADELAIDE RADIO CLUB

A Year to Remember

There is a very good reason to remember 1988. The First Fleet Re-enactment was held from April 1 to 11. It was the Port of Adelaide Radio Club's first major involvement with an historic event.

On March 23, the club was asked by Alan Malabone VK5NNM, from the WIA, to help with the erection of antennas, etc. On Friday March 25, Alan and a group of members arrived to check the site, situated in No 1 Shed near where the Yolla and Nelaboe berthed. After some discussion it was decided to erect the antennas on the following Monday, under supervision.

On Monday, three club members arrived and waited for several hours. They were then notified that there were no antennas to erect!



From left, Ron, Jack, Rodney, John, Betty, Don (President), Alan, Rennis, Harry and Charles.

SPECIAL EVENT

—by John Mullins VK5PTT

"You what!" said the member
With such a retort,
"We're setting up a station
Down at the Port"

"Yes," said the Pres
"The First Fleet is here,
And I want all of you members
To set up the gear"

We have a vertical, a long wire,
And a 940S,
Though how long it runs
Is anyone's guess.

So the antennas were strung
High above the ground,
They were fastened with bolts
And were securely bound.

The coax was run
Into the set,
1.3 was the SWR
That's the best we could get

100 watts was pushed up the spout
"Huuuuloo, huuuuloo, are we getting out?"
For the next 10 days the call was sent
"This is V88SA Special Event!"

Yes, it's Australia's birthday! That's why we're here,
To celebrate with humour, laughs and good cheer.

The operators were mostly, novice and full.
"SO"

There was nothing more pleasing
With the 10 days I spent,
Than to work with my "friends"
At the "Special Event"

Contributed by Don Hobbs VK5AS, President

NERGS DO IT AGAIN

The North East Radio Group (NERG) of Melbourne retained its reputation as the premier foxhunting group by its showing at the Mount Gambier Convention

A contingent of about 30 NERGs attended the convention, which was held over the Queen's Birthday Weekend

Displaying their foxhunting skills to good effect, they won all but two of the foxhunts

The convention's overall trophy contest saw a closely fought battle between the traditional NERG teams of Geoff VK3CGH and Paul VK3DIP

Geoff's team finally came out on top by a small margin. His team included Ewen VK3BMV, Richard VK3CRH/VK7CGG and Greg VK3VT

They have won the overall trophy contest now for four years in a row

TRAFFIC JAM COMPUTER

An on-board computer system which enables drivers to avoid traffic jams is to begin trials in Britain

The system, known as Autoguide, will be used initially on the stretch of the M4 between Heathrow Airport and central London — Europe's most congested motorway

Each computer will be programmed by the driver to pick up traffic information as the car passes roadside beacons

The quickest route to any given destination will be plotted automatically and instructions on detours to take then appear on a dash-board console

An infra-red beam will also give cars equipped with the system priority at traffic lights, enabling the light to be held on green or to switch from red to green as the vehicle approaches

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yourself in Amateur Radio.**

On Wednesday, a meeting was held at the clubrooms and it was again arranged for club members to assist the erection of the necessary antennas

Club members arrived on Thursday, armed with a roll of wire, supplied by Alan VK5NNM, a trapped vertice, from Charley Bonnici VK5DZ, and a ground plane supplied by Don VK5AS. The first task was to erect a long wire antenna. One end was attached to an old control tower, originally part of the Jervois Bridge which was built in the '80s at a cost of £85 000. The other end was attached to a 40 feet high wharf shed, and then into the radio shack in the old Wharfinger's Office. (Originally, space had been allocated in the Maritime Museum, the cabin of the tug *Formosa* but that was found to be too noisy and congested for radio use)

After testing the long wire, the trapped vertical was erected, attached to a maintenance ladder at the end of the building, 40 feet above ground. After sorting out where to run the ground rods, it was tested and found to be in working order. Next the two masts were installed and tested. All was operating well.

On Friday, April 1 Alan arrived with a TR-940S transceiver loaned by the WIA. The first contact was made by Harry Hillard VK5AHH, at 0002 UTC. This was with VK6NIP Operators on the first day were VK5s NNM, ZN, and AHH. Many stations were contacted before the First Fleet arrived using the special call sign, V88SA. The First Fleet, nine ships in all, was certainly a magnificent sight

The radio shack was open to the public every day the Fleet was in port from 10 am to 10 pm. One special contact during the event was with the sailing ship *Eagle* KM1G, which was located off the coast of Mexico.

A welcome operator on the Wednesday was Jenny Warrington VK5ANW, President of the SA Division of the WIA

During the 10 days of operation, there were 567 contacts made with V88SA and many visitors were welcomed to the shack. Thank you to all members of the Port Adelaide Radio Club who made this event such a success.

Special thanks are extended to the following members for their specialised assistance: John VK5PTT, Grant VK5ZLY, Tom VK5NTJ, Graeme VK5PAF and Harry VK5AHH

John VK5PTT penned the following verse especially for the occasion:



A new AWA business sector, AWA Distribution, has emerged as a result of the combining of the Measurement and Control Division, AWA Rad Fusion and Car Products, Audio and Hi-Fi and Land and Mobile Communications Groups from AWA Ashfield.

The new organisation will also have a new address: Unit 14 and 15, Macquarie Park View Estate, 112-118 Talavera Road, North Ryde, NSW 2113. Phone (02) 688 5000.

B. Newcombe, Distribution's General Manager Sales, claims the new arrangements will allow for economies of scale in a number of shared facilities and result in improved customer service.

Distribution also intend to adopt a much more aggressive marketing approach.

Also streamlined are the interstate distribution operations which are available on the following telephone numbers:

Melbourne (03) 560 4533, Brisbane (07) 844 1631, Adelaide (08) 272 3588, Perth (09) 244 2884, Launceston (003) 44 5155.

POWER CONVERTER

The power supply designers race toward higher frequency power conversion appears to be "hotting up".

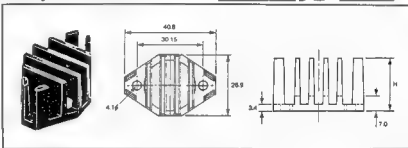
Pulse Engineering have recently released technical information on their new 500 kHz Klipmount inductor and transformer range for Printed Circuit Board (PCB) mounting. Included in the range is a SMPS power unit capable of 350 watts output at 75 percent efficiency. The low profile magnetic structures are a key to the design, whilst remaining compatible with safety.

The Pulse range includes 500 kHz output transformers, gate drive transformers, current sense inductors and transformers, magnet amplifier transformers and more.

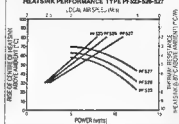
Full details of the 500 kHz SMPS power unit design and magnetics can be obtained from Clarke and Severn Electronics, PO Box 120, St Leonards, NSW 2065.

HEATSINKS

The Redpoint range of heatsinks has been extended to include three-pin, four-pin and eight-pin TO3 configurations.



HEATSINK PERFORMANCE TYPE PF323-526-527



CELLULAR NET EXPANDS

Australia's high capacity cellular mobile telephone network has more than 20 000 users in its first 12 months of operation.

The system, which includes vehicle mounted portable, and hand-held phones, now operates in Adelaide, Brisbane, Hobart, Melbourne and Sydney.

Telecom will expand the network in the coming year to Albury/Wodonga, Canberra, Darwin, Newcastle and Perth.

RADAR HISTORY PROJECT

Australian designed and built radar played a significant part during World War II in the south west Pacific — but nothing appears to have been documented on the RAAF radar personnel.

That will change if a project to collect information on the operational side of RAAF ground based radar receives sufficient response.

Two ex-radar men are seeking information and hope to write a history and provide a valuable record for the War Memorial in Canberra.

The war effort required competent radar mechanics, and one source of easily trained personnel was the ranks of amateur radar.

Radio amateurs went straight to radar school being exempt from a six month radio school course undertaken by other recruits.

The daily diaries of all radar stations are being researched. But they do not give anecdotes, recollections, information and photographs of groups and installations.

All personnel who served on radar establishments, squadrons and stations, can contribute to the project.

Further information is available from Norm Smith, 93 Pacific Highway, Murrumbidgee, NSW 2484, or Ed Simmonds, 8 Lytham Court, Nerang, Qld 4211.



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VK2 Mini-Bulletin

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VK2 MINI-BULLETIN EDITOR
Box 1066, Parramatta, NSW 2150

DIVISIONAL OFFICE

The Division's administrative secretary will be on leave during the month of August. During this period there will be some changes in the opening hours. The broadcasts and the answering machine on (02) 669 2417 will advise the hours.

RETIREMENT

Cec Bardwell VK2IR, retired from the position of Correspondence Course Supervisor at the end of June 1988. Cec commenced his first lecture class for the division in 1959 which continued at Alchison Street until 1979. In the early 80s he also set up the Correspondence Course which has been used by thousands both within Australia as well as overseas. The new Supervisor will be advised in future notices. To Margaret and Cec, thank you.

RD CONTEST

Don't forget to set aside some time over the weekend August 13/14, to help VK2 try and regain the RD Contest. There is a space in the display cabinet at Parramatta for the trophy. The special RD broadcast will be conducted at 5.15 to 6 pm on Saturday afternoon. A repeat of the broadcast in the usual time slots.

BROADCAST ANNOUNCERS/ENGINEERS

With a few dropping out of the roster there are positions vacant. If you would like to assist please contact the Broadcast Officer, Steve VK2KXX, via the office or call backs.



AWARDS — CONTESTS

The Postcode Contest for this month will be on Friday, August 26, from 9 to 11 pm. Details on the broadcasts. Don't forget to return your RD log as detailed in July AR. Several VK2 Awards have been issued. It is hoped to include a list and report in the next Mini-Bulletin. There will be a special one day award on September 22, to celebrate the 70th anniversary of the first wireless message from Australia to England. The call V88WIA will be used on this day — details next month. During November there is the other special award for the Parramatta Bicentenary.

SLOW MORSE SESSIONS

This nightly session is conducted on 80 metres — 3.550 MHz — first from VK2 and then followed by VK5 operators. In recent times it has been suffering interference from both fishing boats as well as other amateurs. Please give the frequency a wide clearance to allow future amateurs every chance to learn the code. The same applied to the VK2RCW automatic transmission on 3.699 MHz.

CONFERENCE OF CLUBS

Illawarra Amateur Radio Society will be the host of the next Conference of Clubs to be held in early November. Agenda items should be submitted to the Divisional Office by early September.

VISITORS

There are a few slots left for both clubs and individual amateurs. Clubs should check the recent club posting. There are one day slots available on August 6 to 12. Check with the office.

There has been a steady stream of cards passing both ways through the VK2 Bureau.

NEW CALL BOOK

A reminder to ensure that your address details for the next call book are as you require them. Remember non-members that the entries that will appear are those appearing in the last edition unless they have advised both the Department and the call book editor of changes. Notification to the call book editor may be made through the Divisional Office. Would repeater and beacon groups also check their entries.

NEW MEMBERS

A warm welcome is extended to the following who were in the June intake

J V Anderson VK2FLN	Silverdale
M J Brewer VK2FMB	Glen Innes
A N Cherry VK2BGA	Blaxland
E A Fogarty VK2MEF	Raymond Terrace
R F Hawksley Assoc	Newport
G Leszinski Assoc	Cambridge Park
R Manari VK2NAR	Greystanes
R W McDougall VK2BPA	Brighton le Sands
G W McLennan VK2FPA	Kurn Kurri
A W Mellis VK2MDO	Goulburn
T Nakamura Assoc	Sydney
B Nicholson VK2ABN	Gladesville
P H Norton Assoc	Coonabarabran
C J Nutt VK2DCT	Gladesville
R R Smith VK2DVT	Heathcote
G Soyuzastil Assoc	Auburn
C G Stennett Assoc	Coffs Harbour Jetty
E Synstra VK2KEH/SCV	Faulconbridge
R Turner VK2CCX	Hilldale

Forward Bias

Norm Gomm VK1GN
GPO Box 600, Canberra, ACT 2601

DIVISIONAL PARTS BOX

The Division has established a Divisional Parts Box for those hard-to-get components such as variable capacitors. Neil VK1KNR has offered to look after the box and is seeking suggestions for items to obtain.

COAXIAL CABLE

The VK1 Committee is arranging a bulk purchase of Mil Spec RG 213 cable as a very good price. A similar purchase of Mil Spec RG 58 was sold the very first night, so the price must be right! Alan VK1WX is the contact for this cable.

ATV GROUP

After some careful consideration, the local ATV Group has decided to settle on an in-band (70 cm) repeater for the ACT area. Inquiries to Neil VK1KNP.

MONTHLY MEETINGS

The May monthly meeting included a trash and treasure sale and an introduction to repeater operation for novices. Due to the poor weather, attendance was down on the night, but those who attended had a great time transferring highly prized items from one owner to another.

The topic for July was a talk and demonstration of satellite broadcasting by Neil VK1KNP.

The proposed topic for the August meeting is a presentation on Project Raven, new communication equipment for the Army. This topic is subject to confirmation.

Hank VK1HZ, is always looking for new and innovative topics. So, any suggestions will be gratefully received.

Future meeting dates are

August 22
September 26
October 24
November 28

PACKET ACTIVITIES

As well as two metre and 70 centimetre repeaters on Mount Ginn, the Division is installing a digipeater for the local packet enthusiasts.

Because of interaction problems with other equipment, the repeater will operate on 144.800 MHz. A major innovation is the use of a 4800 baud rate. The digipeater is based on a TNC2 and HAPEN modem, using direct FSK on a FM 828 transceiver. Subject to Canberra's weather and some minor technical problems, the new digipeater should be operational by the time this issue of AR is out.

The ACT Packet Group normally meets on the first Thursday of each month, but this is subject to variation. Details of venues and dates are beaconed by Richard VK1UEF, about one week before a meeting.

Details on the ACT Packet Group activities can be obtained from Carl VK1KCM, by telephoning (062) 89 7819 (work) or (062) 58 3921 (home).

REPEATER NEWS

In the last issue of AR, we mentioned that the antenna on the Mount Ginn two metre repeater had expired and was to be replaced. At the time of writing, the new antenna has been in operation for a couple of weeks and reports coming in show a

greatly increased range. Stations in south-west Sydney are able to reliably work the repeater. Along the Hume Highway it can be worked as far north as Mittagong, and below Jugiong to the south.

The people behind the effort were Paul VK1BX, Rob VK1KRM and Alan VK1WX. Congratulations on a top-job folks.

Users of Channel 7 are reminded that this repeater is intended for mobile voice use only. However, the Division sees a need for experimentation and has approved the use of the Black H I repeater (146.900 MHz) for experimental use subject to the technical provisions of the operators licence and normal operating courtesies. Other modes are acceptable, as long as FM modulation is used and the normal bandwidth for FM is not exceeded. Any inquiries should be directed to members of the VK1 Division Committee.

THEO VK1KV

Theo Vidler VK1KV, apparently under considerable pressure and with great reluctance, has left the mild climate of Canberra to move down to the harsh environment of the NSW South Coast.

Theo has been a stalwart of the VK1 Division for many years, not only serving on the Committee, but providing a positive contribution on other occasions. His main interests are in 80 metre chat and VHF packet. He is looking forward to maintaining those activities and meeting new acquaintances on the South Coast.

Good luck from VK1-land, Theo.



WA Bulletin

Fred Parsonage
VK6 HONORARY SECRETARY
PO Box 10, West Perth, WA. 6005

COUNCIL REPORT FOR THE YEAR APRIL 1987 TO MARCH 1988

MEMBERSHIP

In November 1987 we had 761 members as compared with 748 in December 1986. This is creditable at a time of falling real standards of living and also a time when there is a strong drift away from all kinds of voluntary associations. A hearty welcome to all new licences and former members rejoicing who made this possible.

MEETINGS

General Meetings continued to be held every third Tuesday night. Glyn VK6JAG completed a full year as Program Organiser and provided us with an interesting and stimulating lecture every second month. In July, we were advised by the Institute of Engineers that in 1988, it would not be possible to book Science House for 12 months in advance and there may be nights when it would not be available to us. It was with some heart searching not to say some hall searching, that we decided to transfer the meeting venue to the lecture theatre at the East Perth Westral Centre.

At the 1987 AGM, the Secretary VK6PF indicated his intention to retire. Pleas, threats and personal approaches all failed to produce a replacement. In the end, Harry VK6WZ, a white stick operator, volunteered to take meeting minutes, with a President directed that Council members would have to handle their own correspondence and share dealing with general correspondence. That this should have happened is an indictment of the selfishness and lack of interest of institute members. In July 1987, Fred VK6PF relented and took back the Secretaryship, enabling the Division to carry on.

During the year visitors from the north-west, VK3 ZL1 and 9V1 attended meetings.

CHRISTMAS MEETING

In what seems to have become a tradition, a pleasant and successful Christmas meeting was organised by Cliff and Christine VK6Z and VK6ZL, at the Westral Centre. The newly created Department of Transport and Communications was well represented by our guests Trevor Jones, Glen Ogg and Barry Butler. There was no award of Amateur of the Year this year, but Outstanding Voluntary Service Certificates were presented to the Hills Amateur Radio Group and the Northern Corridors Radio Group for their high degree of enthusiasm and activity. To Ray VK6NRN for his dedicated service to the QSL Bureau and to Eric Smith for his service to the history and preservation of amateur radio beyond his duty as Wireless Hill Museum Curator.

In addition, specially commissioned plaques were presented to all of the Practice Morse and News Broadcast operators and the respective coordinators, Malcolm VK6LC and Harry VK6WZ. Finally, Fred VK6PF was presented with a brassbound bookhead clock as a token of gratitude to him for sacrificing most of his leisure time to the Wanneroo mast case. Incidentally, the Christmas Meeting was held on the second Tuesday so as not to be the week immediately before Christmas.

EXAMINATIONS

We were invited to nominate an Institute representative to attend the exams and view the question papers. The purpose of this was so that in the event that a candidate claimed that the paper or any question was unfair, the Department would have an independent body to call on for an opinion. We nominated Dave VK6WT, and in the event it

proved more useful than the Department expected because his reports, which we forwarded to them, highlighted some ambiguous questions and unhelpful styles which were subsequently corrected.

The Department has implemented its declared intention to devolve the conduct of examinations as an examiner and expects to conduct its first exams by August 1988. The job that Dave was doing will be carried on with a committee from TAFE, DOTC and WIA.

SPECIAL EVENTS

JOTA this year, while being its normal success, was enhanced by the generous provision of an AUSSAT link between a repeater in VK6 and one in VK2.

Officers of the Ionospheric Prediction Service visiting Perth offered, at short notice, to give a lecture of interest to amateurs. This was arranged for July 27, and was enjoyed by those able to attend.

KARRATHA STUDY GROUP

Malcolm VK6LC, spending some time in Karratha in the course of his employment, decided to revive amateur radio and formed a study group. With some assistance from a local novice, Steve VK6NAK and Chris VK6AVX, a number of its members succeeded in obtaining licences.

PRACTICE MORSE

We note here that trial practice Morse sessions on Channel 2 VHF repeater have been going out for over 12 months.

FUTURE OF AMATEUR RADIO

Early in the year, a Future of Amateur Radio subcommittee conducted some deliberations but reached no firm conclusions excepting that we should be looking to the very young and very old in the community for recruits into the hobby. At this point it was eclipsed by a Federal Committee on the same subject.

PACKET RADIO

Harmful interference was experienced to the Travellers' Net from unmanned (mostly) packet radio stations operating above 14.100 MHz. We asked the Federal Executive to approach DOTC on the matter, sending them a submission drafted for us by Arthur VK6ART. There were also private letters to the Editor of AR noting the ungentlemanly behaviour of the packeters. Many other letters followed, revealing a strong polarisation of opinion.

BROADCAST

The Council made some decisions with regard to the news broadcast, namely that there should be a deadline of 8 pm Friday for input and that we would adopt a policy of phased upgrading of equipment over a five year period.

RADIO MASTS

The unifying thread which runs through the whole year is the power struggle, or more correctly the struggle for justice, between the Institute and the Wanneroo City Council over radio masts in which we have made Peter Hackett VK6PK, our gunner. The case has been marked by much bitterness and anger and a great deal of decent and capriciousness on the part of Wanneroo. At the Local Government election, the Mayor campaigned on a platform which included "ridding the City of unsightly radio masts". The City circulated an extraordinarily biased letter inviting objections from residents and someone anonymously circulated a provocatively false petition. Our appeal to the Minister for Local Government against the refusal of a building licence for a four metre mast

was turned down without reason. The City was informed by the DOTC that interference was no business of theirs. On a further appeal to the Planning Appeals Tribunal, the City admitted the loss of amenity was not a valid ground for objection. They then rejected a further application on the grounds of interference and loss of amenity against the advice of their paid professional staff. Institute councillors attended at least three meetings with the Technical Services Committee, each time going away with bland assurances of goodwill. Words fail one to describe the duplicity of the Wanneroo Council. Another appeal is pending.

Some good which may yet come out of this is that the council staff arranged a meeting between the Institute and representatives of the Northern Zone of the Local Government Association to discuss model bylaws to permit a prescribed mast and antenna to be erected without requiring permission from neighbours. Unfortunately, progress from the LGA side has been slow.

FINALLY

On behalf of all the members, I would like to thank all Councilors for their dedicated work throughout a difficult year, but none more so than Fred VK6PF who has, literally often, borne the burden in the heat of the day.

Bruce Hedland-Thomas VK6OO
President

A Call to all
Holders of a

NOVICE LICENCE

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11 am to 2 pm M to F and 7 to 9 pm Wed

Five-Eighth Wave



Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

Some of the VK5 Divisional Council — from left: Peter Madden VK5PRM, Minutes Secretary; Don McDonald VK5ADD, President; Hans Van Der Zalm VK5KHZ, Secretary; Jenny Warrington VK5ANW, Immediate Past President; Alan Mallabone VK5NNM, Membership Secretary and Education Officer; and Bill Wardrop VK5AWM, Treasurer.
Not present were: Ken Westerman VK5AGW, Clubs and Country Members Representative and Membership Secretary; Bob Allan VK5BJA, PR, SATAC, DOTC Liaison and Vice President; Rowland Bruce VK5OU, Federal Councillor and Vice President and Graham Iles VK5AT, WICEN Director.

HELP

I have had the following two requests for over a month, but I ran out of space in last month's column.

The South Australian Historical Aviation Museum, in Mundy Street, Port Adelaide, is looking for anything pertaining to aircraft, that can be restored or used to restore any World War II aircraft or equipment. If you are going to clean up the shack and have anything that looks like ex-service equipment don't throw it out, take it to the Museum, which is open on Wednesdays and weekends or contact Lloyd Jory VK5TP, on 43 7585.

George Lukacs collects anything to do with Antarctica, in particular the Australian Bases. Post cards, letters, QSL cards and any philatelic material would be greatly appreciated by George. You can ring him at home on 45 4800, or at work on 212 1141, or write direct to him at 23 Hurstfield Terrace, Findon, SA 5023.

Also, we are still looking for volunteers to:

- (a) form a Picnic Committee (here is the ideal opportunity for all those people on the northern side of town who complained that Bridgewater was too far to go), and
- (b) Ray Bennett VK5RM, is still looking for people to form an Historical Committee. You can contact Ray on 353 5119.



PHOTOGRAPHS OF PAST PRESIDENTS

I have received the first of those photographs of Past Presidents that I asked for. Tom Laidler VK5TL, who was Divisional President from 1969-70 has donated a nine by seven inch black and white photograph of himself taken around 1952. I believe I suspect that our next request will be for someone who makes picture frames, as a hobby! (I hope that we are going to need lots more frames!)

I have also received, from Clarry Castle VK5KL, a photocopy of a couple of pages of AR for September 1, 1938. Clarry has pasted these onto a board so that they can be displayed in the Historian's Cabinet. It names members of the very first VK5 Divisional Council, (except that J.W. Hamby-Clark VK5AA, our first Divisional President, comes out as J.W. Hamby-Black) circa 1918. It then goes on to show a photograph of the 1938 Council, and gives a thumbnail sketch of each member. At least three of these are still seen down at the BGB from time to time.

Clarry VK5KL and Frank Bourne VK5BU, attend the monthly meetings, and Bill VK5WW and Clarry are 160 metre operators for the Sunday Morning

Broadcast. Not bad for a group who have all been around the WIA and licensed for over 50 years!

Perhaps, one of these days, when space permits, I'll give you some Thumbnail Sketches of the current Council. Meantime, you'll have to content yourselves with the accompanying photograph taken on the evening of the AGM in April.

DIARY DATES

August 23 — General Meeting (we are trying to get a speaker on Cellular Phones, but nothing definite yet) 7.45 pm

August 30 — Buy and Sell 7.30 pm

September 27 — Display of Members Equipment, start getting your latest home-brew equipment ready to display, it could win you ESC Vouchers, the Millar Award (donated by Merv VK5MX, to the best newcomer) and including a \$20 cheque, or the ICS Award donated by John Moffat VK5MG, for the best all-round winner, which also has a monetary value. We thank both Merv and John for their donations, and hope that there will be some stiff competition provided by the participants. 7.45 pm



QRM from VK7

John Rogers VK7JK
VK7 BROADCAST OFFICER

1 Doreville Court, Blackburn's Bay, Hobart, Tas. 7052

BRANCH MEETINGS FOR AUGUST

The Northern Branch meets on August 12, at the Australian Maritime College at 7.30 pm. In response to recent discussions on the meeting format, there will be as short a business meeting as possible, to be followed by a practical session, details of which are given on the Sunday VK7WI broadcasts, via Leon VK7NHG.

The Northwestern Branch meets on August 9, at the Penguin High School, also at 7.30 pm. Information on the meeting agenda and activities are available via Greg VK7ZBT.

The Southern Branch meets on August 3, at the Activity Centre, 105 Newtown Road, Hobart, at 8.15 pm. It will be immediately preceded by an Executive Meeting, same venue, at 7.30 pm. Arrangements will be set out for a Gabfest,

barbeque, and Mark II Monster Sale, for Saturday, August 6. The Mark II Monster is far more horrifying than the Mark I version, so should succeed in instilling such fear into members that they really will let go their purse strings and buy up everything in sight. Then the \$1000 target for TARC will be reached and Rai VK7VYV can breathe again, and so for that matter, can our TARC Organiser, Peter VK7ZPK.

Broadcasts for the Division are still developing with the repeat on 80 metres on Tuesday evenings receiving good reports. The method of presentation is showing signs of changing patterns, too, as new equipment at the Activity Centre in Hobart, comes into operation. Taped interviews are now possible and this means an increasing number of

amateurs have access to the VK7WI broadcasts. Newsreading has also become possible for additional operators, with the broadcast console working at the Centre.

Repeater 2 has now been fitted with its new control unit, and Repeater 6 has improved characteristics, due to the work of several dedicated amateurs. That work is much appreciated by all repeater users, especially by those who, from June 1, have been experimenting on two metres for the first time.

We would remind readers of the ever-nearing date for TARC 1988 and the need for maximum support for this function.

John Rogers VK7JK

Over to You!



VNG — standard frequency and time signal service

As many know, our national frequency and time signal service, VNG, was closed down on October 1, 1987, for financial reasons.

Nearly 100 VNG users met on December 1, 1987 and resolved that this important service should be revived. The Precise Time Working Group of the National Standards Commission was asked to investigate ways of doing this and has identified another transmit site for VNG near Sydney.

The group which operates this transmit site field is willing to run and maintain the VNG equipment. Preliminary estimates of costs for three transmitters are \$30 000 for setting up and \$40 000 per annum running expenses. Telecom has agreed to donate the VNG equipment (including four transmitters) to the National Standards Commission. AUSLIG (the Australian Surveying and Land Information Group) of the Department of Administrative Services is paying the setting up costs.

A VNG Users Consortium has been formed as a subcommittee of the Precise Time Working Group of the National Standards Commission to provide funding to run VNG at the new site. Contributions are held in a trust account and used solely for VNG.

Readers are invited to join this Consortium and contribute to the running costs. Users have already pledged up to \$2000 each and a limited VNG service will be commenced soon. The extent of the service, and the future prospects for long term continuation of VNG, will depend on the amount and reliability of continuing financial support from users.

The consortium has raised a total of \$9537 as of May 1988.

Yours sincerely,

Dr Murray Lattin
Secretary
VNG Users Consortium
26 Flinders Circuit
Kambah, ACT 2602

WARC 1992 EXPENSES

With time moving on towards WARC 1992, it is time to consider how the WIA is going to finance its share of this very important conference. Incidentally, for those optimists who consider that the letters stand for World Amateur Radio Conference, let me disabuse your minds of that idea. They stand for World Administrative Radio Conference — a very big difference indeed.

Regardless of the fact that world amateurs will have no direct input to the Conference, it will be necessary for all amateur bodies world-wide to be represented as a lobby group. Without this representation the amateur service will be torn to shreds by default if it is not indeed dismantled.

The costs of sending at least two delegates are going to be considerable and some way must be found to meet these expenses. Terry Carrell, President of the NZART estimates a cost of at least \$30 per member to meet this expense. With a greater membership in the WIA, the cost per member will still be considerable.

We must be prepared to accept the costs as a leviable and non-members should be canvassed through electronic magazines and direct, to make an equitable donation to the radio hobby.

Assuming the same cost per member here, I suggest a membership levy of \$10 per member be made for the next three years and the levy to apply to each year's subscription. These monies to be

placed in a separate account and earmarked specifically as WARC expenses. Any remaining monies after WARC can be reimbursed to members as a subsidy on their next membership fees.

I suggest that action be commenced now regarding the raising of WARC expenses as there will be less adverse criticism to a number of small levies than one heavy levy at the last minute.

If this letter generates some discussion and the Divisional Councils canvass opinion and advocate early Federal action, I think it will be in the best interests of the amateur community.

Yours sincerely,
Ted Roberts VK4QI
38 Bernard Street,
Rockhampton, Qld. 4701.

DEVOLUTION — A FURTHER STEP

I think it is time the Amateur Radio Service gave some serious consideration to an obvious extension of one aspect of Devolution. This is the devolution by DOTC of the issue of the AOC and licences in their various grades.

I suggest that the licence examinations be held within the framework decided upon by DOTC and the successful candidates be issued their licences by the WIA. A capitation fee equal to the existing licence fee be paid by the WIA to DOTC for each successful applicant and the applicant be charged a combined fee to cover this licence and also the annual fee for membership of the WIA. Obviously, the WIA section of the fee to be charged pro rata for the amount of the current year's subscription to be applied when assessing the charge.

The question of not requiring or desisting membership of the WIA then raises a number of objections. In these enlightened (?) days, the principle of compulsory Union membership is a well-known fact of life, so that principle is not strange to our way of life. The WIA is the recognised voice of the Amateur Service from DOTC's viewpoint and is the collective voice of all amateurs when negotiations between the Administration and amateurs are under way. It is not, therefore, unreasonable to expect all amateurs to support these negotiations financially for their own benefit, as well as the other very real and tangible benefits that membership of the WIA confers on them.

In addition to the initial charges to the newly licensed amateur, the obvious thing would then be to issue all station renewal licences through the WIA on the same basis. Considering the reduction of workload for DOTC, it may prove possible to negotiate a reduction in the renewal fee. There is also the possibility of DOTC collecting both fees and reimbursing the WIA in turn but this would only add to their workload with a corresponding loss of administrative efficiency. Obviously, a DOTC overview of the operation would be necessary periodically to ensure no inequitable issue of licences occurred if this function was passed to the WIA.

This letter is only intended to raise a very valid discussion point amongst the amateur fraternity and administration. I freely admit that it is difficult to say to an amateur "You must join the WIA or else forfeit your licence", but the steady fall in membership of the WIA places an ever increasing financial and administrative burden on the dwindling membership. For the good of the Amateur Radio Service, I suggest we take a hard look at the Government policy of "Let the user pay" and

consider this or a strong alternative policy while we still have a service where we can exercise and enjoy the privileges (and it is a privilege, not a right) that exist under our current licence structure.

Yours sincerely,
Ted Roberts VK4QI
38 Bernard Street,
Rockhampton, Qld. 4701.

NOVICE PRIVILEGES

I would like to express my opinion on the recent addition to Novice privileges.

I sat for these examinations in 1985 after coming from the ranks of CB. I was asked to join a class to make up the numbers and see if I could obtain my NAOPC. After a long period of going to class and trying to fit it in with shift work, I sat for my first exam which I failed.

I then increased my study for the next exam. Bear in mind that, until I first joined the class I had no experience whatever of radio procedures or exams. I sat for the next exam and improved two points over the first attempt. After a few more tries, I decided to try for the Full Call theory and to my surprise, I passed. The first hurdle over, I then had to sit for the CW. At first I got me down, but determination made me go on and after three more tries I received my 'K' Call. That made me a little better, so then I had to take the CW to 10 WPM. This was done after some great effort, and passed after three attempts at 10 WPM.

To achieve my Full Call, all of this by now had taken me two and a half years, much study, and plenty of hard work!

This is a long way of saying I worked hard for my ticket to operate on the bands. And, I make good use of them too.

When it was announced that the Novice could use two metres, and that possibly Morse may be dropped, I thought of the time and effort that I put in — it makes things hard to understand. I don't know where this is going to end.

Just think if I had used the bands on K call until now, I wouldn't have had to worry about my Morse. It seems in the future.

The moral of this letter is, if you work hard for what you want, you will surely get it, and if I can do it so can a lot of others.

Yours W. thanks,
Max Hardstaff VK7KY
8 Glenburn Crescent
Sulphur Creek, TAS 7315

Permitting Novices to use two metre FM phone only, is quite unrelated to their Morse capability. Max, although some limited licensees would like Morse not to be needed for HF privileges, there is no intention by the WIA to move this direction.
—Ed.

NOVICES ON TWO METRES AND DEMOCRACY

Before making the final approach to DOTC on the issue of extension of Novice privileges to include a segment of two metres, the Federal Office had the benefit of various surveys carried out by the individual Divisions.

Their representatives came to the Convention in April 1988, and voted in accordance with their Divisional opinion. There were certain areas of clear agreement.

The preponderance of responses favoured the creation of a common band, and that that should be located within the two metre band. The reasons advanced for such views are important at Divisional level, but at the Federal level, the primary concern is the result brought about by Divisional votes.

Federal can only act on policy formulated by the majority of the Divisions. Despite such a show of votes, there are still some individuals who seem to think they have the right to speak on behalf of some undefined undocumented and inaudible majority with whom they feel they have undisputed and intimate contact.

Federal acted after all opportunity was given for people to be consulted, and for numbers to be crunched.

It is time for all to realise that they are not alone in this world, and that acceptance by a minority of a majority decision is part of the democratic process. To keep defying the decision of the majority who chose to express themselves, is to defy democracy itself — a bit like anarchists fighting in the name of what they perceive to be democracy. Democracy does not mean that everyone's view must be accepted at all times. That is impossible. That is an obvious proposition, but it seems I must be said.

Those who write to the Minister expressing their objections to the Novice decision, are really undermining the status of the amateur body as a whole, and not that of the WIA. They must consider the possibility that some of the outbursts which have been expressed, particularly when they get the Minister's name wrong, really reflect poorly on themselves.

George Brzostowski VK1GB/VK4UJ
GPO Box 789
Canberra, ACT. 2601

RIG WOES!

Prompted by the article in AR March 1986, by C H Castle VK5KL, regarding his troubles with a FT-101, I wonder if anyone has had a FT-901DM which would not tune-up with the "tune" button in the manner described in the handbook, and noticed a one amp diode tack soldered to the back of the tune unit PB-17207 I'd be interested to hear of the reason and/or cure for this phenomenon. I suspect a relay/ring board incompatibility on the rig here. Thanks.

Murray Kelly VK4AOK
29 Molong Terrace
Gracerville, Qld. 4075

MULTIPLEX/PERPLEX

Thank you for publishing my article, To Multiplex or Perplex, in the May 1986 issue of AR.

I wish to point out a drawing error in Figures 6 and 7, the first two columns of the enabling diodes are the wrong way round.

The should be as follows.

ENABLING DIODES



Yours faithfully
Jack Heath VK2DWH
2 Barclay Street
Quakers Hill, NSW. 2763

PARCEL POST

With reference to the letter from Jim McPherson (AR, June 1986) the Postal Guide, Section 10.56 includes "QSL cards, (amateur radio call cards)" among the articles not acceptable as Printed Papers, whilst Section 10.97.2 includes them in a list of "acceptable enclosures in small packets". Briefly, they may go as Small Packets but not as Printed Papers. Within Australia they are Non-standard Articles, the Small Packet classification only applying to Overseas.

The limit of five words only applies to greeting cards sent overseas at the Printed Paper rate, so does not apply to QSL cards.

Parcel Post rates apply over 500 grams within Australia. This is much more expensive but considerable savings can often be made by sending two packets. For instance, a parcel of 600 grams from Hobart to Brisbane surface mail costs \$7.05, whereas one lot of 500 grams and one of 100 grams would only be \$2.78!

Yours faithfully,
Chas Harrison VK7CH
Manager
VK7 QSL Bureau
EE Yfauitau/IFFI/IIII
Bellevue, Tas. 7018

REPLY TO BRUCE "GOOD TO KNOW"

(Amateur Radio, June 1986)

In reply to Bruce Jackson's letter, AR June 1986 issue, I am surprised to learn that Bruce did not know that we always used pigeons. We even had them at Point Cook. No doubt, as an old Radar chap, he is still "looking a bit", and having trouble with his VDU screen. However, it might be interesting to note that not many keyboards are used on the low end of 7 MHz and that most of the CW is hand-generated. The spacing at times with some operators does get a little tight, however as most have been around for a few years now, a CW "in the head" receiving capability of 40 to 50 WPM is general, there are no problems, as the trained human brain can automatically correct any anomalies. You seldom hear anyone asking for repeats even under poor reception conditions, this of course is an impossible situation for the VDU viewer, and Bruce being an old looker from way back would be aware of this.

Yes, the RAAF Signals Group met and marched again this April in Sydney, an excellent reunion resulted.

Good luck to you too Bruce, and I hope you may join us on CW sometime, you would be most welcome.

Peter Alexander VK2PA
Rollands Plains
Vie Telegraph Point, NSW. 2441

INTRODUCING MARKUP

(June 1986 Amateur Radio)

Unfortunately a few small errors have crept in. Most are relatively unimportant, however one may result in the demise of the oscillator transistor.

- Page 6, column 2 should read "would give rise to a slight frequency"
- Figure 2, the base bias resistor of Q1 should be 68 kohm
- Page 11, column 2 should read "A calibrated CRO with time base "5AY" to about"
- Page 11, column 2 — the 47 uF capacitors mentioned should be 0.47 uF

Best 73,
dx

Ken Kimberley VK2PY
21 Nicoll Street
Rollands, NSW. 2196

YOU PROTEST — I'M DISGUSTED

With reference to the letter by Neil Penfold VK6NE in June AR. Not being much of a paper-chaser myself I have never really worried how much awards can cost until very recently when I applied and received an award from an Australian club — very nice too!

Knowing that there are quite a number of clubs within VK, I suddenly realised that it would cost me an arm and two legs to get all of these awards. Yes, before we go looking overseas, have a look at oneself — shocked — you should be. The average cost of printing awards is 15 cents, average postal charge is 60 cents, and an envelope will cost approximately 12 cents. Total cost — 87 cents.

Why do clubs persist in advertising the reward when it can cost you up to \$4.00

Well, you quoted 14 IRCs, some will cost you 20 IRCs — expensive! Some overseas countries don't seem to care the value of money — or don't seem to care I sometimes think they feel that. I want their awards then we will pay their "rip-off" price.

Finally, I wish all clubs world-wide the best of luck in selling their award. Please be realistic!

73
Bill Horner VK4MWS
26 Iron Street
Gympie, Qld. 4570

HAVE WE GOT IT ALL WRONG? NO!

The letter from David VK2PGE (AR, April 1986) may happily be applicable in the eastern states of Australia, but unfortunately Local Government is quite different in Western Australia.

1. Unified Building Regulations Board — It does not exist in Western Australia. There are Uniform General Building Regulations, but each council may set down its own set of bylaws and policies.

2. Mast construction is not the issue, so long as it is an "eng neered structure" a building permit may be issued.

3. With the City of Wanneroo, the amateur VK6PK, having made his application, was told that all his neighbours must agree to its erection.

4. Neighbours said no, end of story, almost.

5. Appeals were lodged and dismissed, even after the mast height was reduced to 4.7 metres (which incidentally is 27 centimetres above my own single story roof-line).

6. Neighbours, even if only one object, take precedent over the lawful licenced emission of amateur RF from an antenna mounted on a mast.

7. Latest council report of continuing with the refusal to issue a building permit, is that the mast will cause interference and loss of amenity.

8. Back to the amenity issue — council agreed that visual amenity was not an issue legally but was a policy of the council. A councillor is quoted as saying "Amenity is a major issue whether we like it or not".

9. Council decisions are contrary to advice received from its own solicitor and the City Building Surveyor.

10. The Supreme Court case of SA (WIA versus Moorabunga) which found in favour of the VK6 amateur, has no bearing in VK6.

Case proceeding!
Anti Penfold VK6ME
6 Moss Court
Kingsley, WA. 6026

DID CARDS — CLOWING DESCRIPTION

It is a little disturbing to find that there are apparently some operators who have passed the theory and regulations examinations for ACCP, but still don't know how to fill in a QSL card correctly. I have received cards from some VK stations with my call sign or signal report missing, and even more surprising, no mention of the other stations

location I don't know how they expect to receive a return QSL, even if I felt like sending one after getting a useless card from them!

Almost invariably these "dud" cards contain a glowing description of the rig, antennas, shack and so on, which tends to suggest the missing information was not overlooked by writing the card in a hurry.

Surely the correct method of QSLing should be part of the knowledge required to get a licence, after all we have to know all the Q-codes, emission mode codes, etc. With the cost of postage these days, it is not very pleasing to spend money obtaining useless bits of cardboard. It would also be very disappointing for an overseas station to receive a card from VK which they could not use for an award such as WAWKCA etc because the sender omitted the essential information. They might tend to wonder whether getting a VK call sign was a bit too easy.

Incidentally, I don't think I have ever received an overseas QSL which wasn't not completed correctly.

Yours faithfully,
RF Hancock VK5AFZ
PO Box 361
Port Elliot, SA. 5212

♦ ♦ ♦

NETS AND PACKET

Re the Packet/Travelers' Net saga, I feel I must rebut the letter written by VK4DFR, June AR, page 58. Pete makes quite a few interesting points, but the suggestion of moving packet to the top end of 20 metres is the most absurd of any of the proposals I have yet heard.

Nobody that I am aware of, apart from supporters of the Travellers' Net, has objected to the present location of the packet sub-band. The Travellers' Net is the on y major net meeting daily between 14.100 and 14.125 MHz. In contrast, the top end of the band (assuming he means from 14.300 MHz up) includes the QRP calling frequency, Maritime Net, Brown Sugar Net, Maritime Emergency Net, Seafarers Pacific Net, SE Asia MM Net, SEANET Skippers Net, US Races frequency, and by "Gentlemen Agreement" (I won't get no any correspondence over the use of this term) from 14.340 to 14.350 MHz reserved for emergency, and some EME work is also done around 14.345 MHz. Reference the HF net list in ARA Vol 10 No 10.

So if either party has to vacate the lower end of 20 metres doesn't it sound ludicrous that one net insists that it "owns" that frequency by virtue of "being there first"? If packet is so detested by SSB operators then obviously the suggestion of "see

packet up at the top end. " needs a bit of a rethink.

Sincerely,
Brian Field VK6BQN
PO Box 102
Wanneroo, WA. 6025

♦ ♦ ♦

INTERNATIONAL TRAVEL HOST EXCHANGE

SACKCLOTH AND ASHES!

Following is a letter to Ash VK3CIT, ITHE Co-ordinator.

Time passes so very quickly, and I can only apologise most sincerely for not writing you before now to thank you so much for putting me in touch with Casey Schreuder VK2CWS, the sole Sydney volunteer in the International Travel Host Exchange.

So here is my report — better late than never, but better never late, as they say.

Casey and his wife Mary could not have been kinder to me than if they had known me all their lives, and I was very quickly made "one of the family". They took me everywhere with them, swimming at Bondi Beach, to the beautiful country parks, the awe-inspiring coast-line, surf clubs, radio clubs — so many things, it is hard to mention them all. But it was a wonderful experience, living with and taking part in the life of a real Australian radio amateur — not to mention, getting on the air every night with Casey and joining in the Fishers Ghost net, for which I had the honour of being presented with a fine certificate — how's that?

For my own part, I did my best to "fit-in" with their arrangements, and this is very important for "travellers".

I have now been host for the SERVAS organisation (very similar to ITHE) for 20 years, during which time I have had travellers stay with me from many parts of the world — a wonderful cultural exchange.

Wayne Green W2NSW (Never Say Die, of 73 Magazine started a "Ham Hop Club" in the States in the early 70s, but unfortunately this did not last for many years — a great pity.

Once again, very many thanks, and please ask any of your members visiting England and wishing to visit the little Isle of Wight to write or ring me on 0983 67665, and I will do my best to accommodate them.

73,
Douglas Byrne G3KPO
52 West Hill Road
Ryde
Isle of Wight, England, PO33 1LN.

CLERICAL ERROR CAUSES A STIR

Pressure on the spectrum is uppermost in the minds of thinking radio amateurs and their national society in most countries.

Recently a beacon station appeared on 440 MHz (70 centimetre band) in Vancouver, Canada, identifying itself as being operated by the Customs and Excise Department.

It was conducting propagation tests prior to the setting-up of a permanent station on a mountain top.

After a flurry of activity sparked by concerned radio amateurs, it was found that the beacon had been assigned 440 MHz in error.

DUTCH SIX METRES

Radio amateurs in the Netherlands have just been given permission to operate up to 30 watts CW on the 50.00-50.45 MHz portion of six metres. Previously the band had not been available in that country.



Magazine Review

Roy Hartkopf VK3AOH
31 Indrag Road, Aylmington, Vic 3087

- G — General
- C — Constructional
- P — Practical, without Detailed Constructional Information
- T — Theoretical
- Of particular interest to the Novice
- X — Computer Program

CO — April 1988. RFI and the Novice (G N) Meterless RF Bridge (G N) Packet Picture Transfers (A F) The Flammaker Bandit (G)

HAM RADIO — March 1988. 20th Anniversary issue. High Dynamic Range Mixing (T) Yagi Antenna Gain (P) Parametric Amplifiers (T)

HAM RADIO — April 1988. Function Generator (P N) UHF Frequency Synthesizer (P) Sensa Data Latch (P) Antenna Tuner (N)

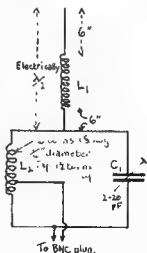
WORLD RADIO — April 1988. General information on amateur activities and products. Expeditions, propagation etc. News about clubs and special events (G)

RADIO COMMUNICATION — May 1988. Fitting Coaxial Connectors (G N) RSGB Annual Meeting Minutes (G) Wind Loading (G)

QST — April 1988. Phase Noise (T) VHF Sporadic E Propagation (G) Safety on Towers (G) Amateur Radio in Yugoslavia (G)

BREAK IN — May 1988. Packet Radio special (G)

Improved Hand-Held Transceiver Antenna for Two Metres



—Reprinted from AR, UK and contributed by John Rogers VK7ZK



QSP

THE QSL BUREAU DELIVERS

Ted Renouf VK2AWR had a surprise among the QSL cards he received via the VK2 Bureau — no, I was not confirmation of a rare DX contact but a card for his first contact with a VE4.

So, what a special surprise, you ask? The QSL was for a contact on April 24, 1966, and has arrived 22 years later.

Ivan D. Morn VE4IM, of Winnipeg, acknowledges having received VK2AWR's card for the 14 MHz SSB contact. The Canadian cards say "Ted, very happy to be your first VE4. Ivan."

Ted said he was pondering whether to write a nice letter of thanks to Ivan. Please do Ted, you must try and solve the mystery for all of us.

IONOSPHERIC SUMMARY

The IPS and Radio Space Services summary for April contained the following monthly average details:

10 cm flux — 123.4,
Sunspot number — 88,
A Index — 13.3,
I Index — 75.2,
Flares — 12

Solar activity was moderate to high during the period April 12 to 24. During this period there were 12 M or K class flares. Most of these came from a region which grew rapidly on the solar disc on April 11. The region rotated off the disc on April 25. The largest flare during the burst of activity was an X1.2/2B flare on April 14. M class flares occurred on April 12 — 1; April 15 — 2; April 16 — 1; April 17 — 1; April 18 — 2; April 20 — 1; April 21-22 — 1; and April 24 — 1.

The solar flux and the sunspot number rose dramatically during the middle part of the month to levels not seen since 1984. The solar flux peaked at 147 on April 16. By the end of the month, the flux has settled back to levels just barely in excess of 100.

The monthly averaged solar flux and sunspot number both reached new high points for this solar cycle. The 12-month averaged solar flux and sunspot number both reached new high points for this solar cycle. The 12-month smoothed sunspot number for October 1987 increased substantially over the previous month due to the recent burst of solar activity.

In the case of geomagnetic disturbances, from April 2 to 6, an extended period of disturbed conditions occurred during this period. The geomagnetic field became active during the period 0900 to 1400 UTC on April 2. However, a major storm started gradually on April 3 after 0700 UTC and the field was at major storm levels through April 4 until around 0400 UTC on April 5.

A further disturbance started after 0800 UTC on April 6 and the field was again at storm levels until late in the day. The field was at storm levels throughout April 22 and until the middle of the day of April 23. April was most quiet in terms of geomagnetic activity. The exceptions were the two intense geomagnetic storms during the periods April 2 to 6, and 22 to 23.

A graph showing cycles 18, 20, 21 and the progress of cycle 22 shows that cycle 22, up until now, increases much faster than cycle 19 so the indications are that cycle 22 could become an all time record. However, there is a long way to go as yet and other factors may be important. For example, it has been suggested that the rapid rise earlier in the cycle is due to a phase advance of the solar cycle, that is, the cycle coming earlier than would normally be expected. If this is the case, we can expect the cycle to reach a large, but not record, maximum earlier than anticipated. This would mean that solar maximum is likely to be reached somewhat earlier than late 1990, which is the expected time of the maximum if the cycle exhibits average behaviour.

—Contributed by Frank Hine VK2QL

Silent Keys

It is with deep regret we record the passing of:

MR B R AUBREY	VK4AU
MR M G BURLEIGH	VK7JU
MR S C N (JOE) BYRNES	VK2FSB
MR R G JACKSON	VK5DR
MR F C MELLON	L20469
MR N A R WILSON	VK5WA

Obituaries

S "JOE" BYRNES VK2FSB

It is with regret the Summerland Amateur Radio Club reports the passing of Joe VK2FSB, of Coraki, on May 10, 1988.

Joe began his radio life on the Citizen Band, moving on to attain the Novice call of VK2VQO in July 1979, before eventually taking out his full call. Joe was very adept in the field of radio, electronics, and antennas as well as making any machinery he required.

His tilt-over tower was made from a windmill to accommodate an HF beam, and wire antennas. He also made a very efficient two metre antenna with the assistance of his wife, Irvy.

He was often heard on Jimmies VK4HZ 60

metre net in the mornings and was frequently on other bands including the local two metre repeater.

Due to a medical condition in his later years, talking became difficult for Joe.

Joe's other interests aside from radio was the Coraki Bowling Club and beekeeping.

He is survived by his wife Irvy, sons and daughters and their families to whom we extend our deepest sympathy.

Bill Parker VK2DI
Summerland Amateur Radio Club

REGINALD GEOFFREY HASKARD VK5RH

It is with deep regret that I inform all amateurs of the passing of my uncle, Geoff VK5RH, on May 15, 1988, aged 81. He will be sadly missed.

He sparked my interest in radio when he presented our family with a crystal set in the early 1930s. Even in these early years of amateur radio, he had covered the walls of his wireless room with QSL cards, using all home-brew equipment for his contacts.

Geoff served with the RAAF in WWII as a Wireless Operator/Technician, surviving the bombing raids on Darwin and later was at the Nav/W Base at Mount Gambier.

I believe the nearest Geoff ever got to "black box" technology was when he purchased an AR7 from me intending to transistorise it — such was the calibre of this gentleman.

Sincere sympathies are extended to his wife, Margaret, daughter Marie, also Peter and grandchildren.

Rex Haskard VK5HO

A PRECIS OF SOME HISTORICAL ORIENTATED HF PACKET RADIO TRAFFIC

The commemoration of the 60th Anniversary of the first Trans-Pacific air crossing, which originated in Oakland USA, on May 31, 1928 and concluded with a safe arrival in Brisbane, Australia on June 9, 1928, with Sir Charles Kingsford-Smith leading the crew was not forgotten, when a special dinner, attended by many dignitaries including Charles Kingsford-Smith, the son of the original leader were amongst those present, to mark this historic occasion which was sponsored by many notables including The Western Aerospace Museum, The Australian Consulate General, Qantas Airways and many others.

Our hobby contributed to the celebrations by forwarding messages from many well-known Australians via one of the newer modes of our hobby, Packet Radio, through the courtesy of the newly formed ASIANET operators and their American counterparts in Oakland.

Some excerpts from the originators messages will be of interest to all readers, such as from the Prime Minister of Australia, The (Right) Honourable R Hawke, M.P. whose message contained excerpts such as "It is 60 years to the day, May 31, that Sir Charles Kingsford-Smith took off from Oakland to make the first Trans-Pacific flight. With him were Australian Co-Pilot Charles Ulm, an American Navigator, Harry Lyon, and an American Radio-Operator, James Warner, truly a fine example of early Australian-American co-operation."

"I congratulate you on your initiative in celebrating the 60th anniversary of this epic flight."

From the Premier of Queensland, The Honourable M J Ahern, M.L.A. who indicated in his message a warm welcome from the people of Queensland and stated "As Premier of Australia's most dynamic and progressive state, I'm delighted to be sending you a message over the airwaves."

"Today, in Brisbane, capital of Queensland, we are hosting the World Expo 88. It's only five weeks old and already more than two million people have passed through the gates."

"On behalf of the Government and the people of Queensland, I extend my wishes for a successful dinner, marking the historic occasion and commemorating those brave pioneers of aviation."

The Right Honourable the Lord Mayor of Brisbane, Alderman Sallianne Atkinson, extended greetings to the people of Oakland and went on to say: "Sir Charles Kingsford-Smith is one of Queensland's favourite sons, and his airplane, the Southern Cross stands at the State's airport as a reminder to the thousands of air travellers who pass through daily, that although their flight may be delayed, their coffee cold, or their favourite magazine not available, things are better now than they were in Smith's day."

"... Many times I have flown between Australia and America, I have marvelled at the grit of Smith and his crew. There is no doubt he helped create the strong bond which exists between our two countries, and which I hope grows stronger in the future."

—Precised by Ken McLachlan VK3AH, from information supplied by members of the ASIANET.

"HAM IN SPACE" RETIRES

Astronaut Tony England WOORE, whose July 1985, shuttle flight on the shuttle Challenger brought the "Hams in Space" concept to new heights, has announced his retirement from NASA. He will take up a teaching position at the University of Michigan, Ann Arbor as a Professor of Electrical Engineering.

Tony is especially interested in working with AMSAT in future satellite projects and his work in Michigan will keep him very much involved in space technology as he will also be doing research in satellite technology as well as his teaching duties. Tony is a leading world authority on remote sensing.

With the departure of Tony from NASA, the next opportunity for continuing the amateurs in space program will fall to Doctor Ron Parise WA4SRP, of Silver Spring, Maryland, a visiting scientist to NASA. Ron's proposed inclusion of a packet radio experiment aboard the ASTRO-1 mission has been delayed while the shuttle program is reorganised following the Challenger accident in January 1986.

Condensed and compiled from *Australian Satellite Report*, Number 177, June 8, 1986



DEADLINE

All copy for inclusion in the **October 1986** issue of *Amateur Radio*, including regular columns and Hamads, must arrive at **PO Box 300, Caulfield South, Vic. 3162**, at the latest, by 9 am, August 22, 1986.

Hamads

PLEASE NOTE: If you are advertising items **FOR SALE** and **WANTED** please write each on a separate sheet of paper, and include all details: eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. Please do not use scraps of paper.

- Please remember your **STD** code with telephone numbers
- Eign lines free to all WIA members. \$9.00 per 10 words minimum for non-members
- Copy in typescript, or block letters — double-spaced to **Box 300, Caulfield South, Vic. 3162**
- Repeats may be charged at full rates
- QTHR means address is correct as set out in the WIA current Call Book

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

Conditions for commercial advertising are as follows: **\$22.50 for four lines, plus \$2.00 per line (part thereof)**

Minimum charge — \$22.50 pre-payable

Copy is required by the Deadline as indicated on page 1 of each issue.

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver and transmitting Applications. For data and price list send 10¢ x 220 millimetre SASE to: **RJ & US IMPORTS**, Box 157, Mordialloc, NSW 2223. (No inquiries at office please.) 11 Macken Street, Oakley. Agencies at: Geoff Wood Electronics, Lane Cove, NSW. Webb Electronics, Albany, NSW. Truscott Electronics, Croydon, Vic. Wills Trading Co, Perth, WA. Electronic Components, Fishwick, Plaza, ACT.

WANTED — AUSTRALIA-WIDE

TRANSLATORS: The Federal Office receives a number of excellent reciprocal copies of amateur society magazines from sister societies in other countries. Assistance is required from anyone who would be prepared to pursue several of the foreign language magazines with a view to keeping us informed of events in those countries, and of interesting technical articles. Are you fluent in Italian, German, Japanese, Dutch or Korean? Would you like to help, and get to keep the magazines? If so, please contact the Federal Office by writing to: Foreign Publications, WIA Federal Office, PO Box 300, Caulfield South, Vic. 3162.

WANTED — ACT

RADIO SERVICE MANUALS: Any year. Price and condition. Jack VK3LIF, QTHR, Ph: (062) 96 6920.

WANTED — NSW

OIL FILLED CAPACITORS: Six oil filled capacitors 15-20 µF 440 VACW or 1500 DCVW. Also, Buttermilk vertical inc 160m coil is possible. Gordon VK2ALM, QTHR, Ph: (065) 52 4411 (BH) or (065) 53 5353 (AH).

USERS MANUAL: Can anyone help with a Users Manual for an Adler Alphatronic Computer Model P3. Will reimburse any out of pocket expenses. Details to Carl VK2EEC, QTHR, Ph: (02) 671 6595.

WANTED — VIC

TRAPS & BITS: Any traps & bits from Hy-Gain TH3JR. Have 2 traps from TH3 Thunderbird for swap or trade. No 878687 — 10m. No 878637 — 15m. Doug VK3AQJ, QTHR, Ph: (03) 657 8475.

WANTED — QLD

HANDBOOK & CIRCUIT FOR SWAN VHF 150: all model amplifier. Will pay cost of postage, etc. Fred, Ph: (07) 396 3521.

13TH HF BEAM: or similar to set up the official Girl Guides JOTA station in Qld. Must be in good condition & reasonably priced. Also, 250 watt 2m & 70 cm, plug in modules for Bird Thru-Drive used 43 watt meter. Contact David VK4ATE, QTHR, Ph: (07) 378 9868 (AH).

WANTED — SA

SYNCHRO TORQUE TRANSMITTER OR INDICATOR (SYNTHSYN): wanted either transmitter, indicator (receiver) or both. Freiter 50/550 cycle units 21 total with X, Y, Z, 3 markings on the base plate. GEC or Muirhead MSLBs are ideal units. Please contact Dean Proben VK5LB, Hope Forest, SA, Ph: (08) 56 7354.

FOR SALE — ACT

VALVES: 200 new boxed valves. 5¢ each, plus \$1 P&P. Also many used good valves \$3 each plus \$1 P&P. SASE please with inquiries. Jack VK3LIF, QTHR, Ph: (062) 96 6920.

YAESU FT-757QG RX/TX: VG cond C/W YM-38 mic, manual & tech suppl. \$1300. Yaesu FC-102 antenna tuner. \$250. QTY used 5933VA valves C/W base, plate caps & leads. Best offer. Hank VK4HZ, QTHR, Ph: (062) 54 3315 (AH) or (062) 65 5304 (BH).

FOR SALE — NSW

ANTENNA FARM: Big towers, 1000' long wires, etc on 26 acres 3000' alt. A nice home, a nice place in life. 2½ hours easy drive to Sydney, 1½ to Canberra. \$145 000. Details VK2UHQ, Ph: (048) 4011, Ask for Smitty on Banbury 28.

ANTENNA TUNER: 1 kW key down, ball & unball outlets. Inbuilt dummy. Made in England, With manual. \$250. Gordon VK2ALM, QTHR, Ph: (065) 52 4411 (BH) or (065) 53 5353 (AH).

BEAM: 5-element Hy-gain No 411 10 metre. 1 Crown rotor Model CAR24. Both with manual. Perfect condition. \$300. Norm, Ph: (065) 66 2544.

DSE COMMANDER 2-METRE TRANSMITTER: 15 watts, repeater offsets, mic & manual. Excellent condition. Recently signed. \$175. Kiri VK2QDJ, Ph: (02) 436 2618.

KENWOOD TR-2500 FM 2 METRE TRANSMITTER: 2.5 watt output hand-held. Kenwood 12 watt quick charger. Mobile stand; SMC-20 speaker/microphone. PB-25 battery.

ies (2): SC-4 vinyl case, owners manual, excellent condition. Offers invited for quick sale. Also, Hidaika VS-33 triband Yagi. \$525 new. Errotator 5025AX Antenna Rotator. \$450 new. Hidaika VS-41 10-40 metre vertical. \$225 new. Manford VK2RV, PO Box 120, Vaucluse, NSW 2050. Ph: (02) 371 8554.

KENWOOD TR-9500 70 CM ALL-MODE TRANSCEIVER: with extras. Mint condition. \$850 ONO. ATN 420-440-11 70 cm Yagi. New unused. \$100 ONO. Kenwood R-620 HF receiver. Covers amateur bands & some shortwave bands. Excellent condition. \$450 ONO. Paul VK2ATR, QTHR, Ph: (049) 59 3748.

FOR SALE — VIC

ANTENNA TUNER: Kenwood AT-230 160-10m, inc WARC bands. Built-in SWR meter, antenna selection switch, coils & single wire pulleys. All new, only used once, in original carton, unmarked. \$230. Bruce Kendal VK3WL, Ph: (03) 741 7854 (AH), (03) 544 4888 (BH) or (03) 543 4553 (BH — FAX).

MODEL 15 TELEPRINTER: Good working order. \$30 ONO. Darryl VK3AJIS, QTHR, Ph: (03) 640 9294 (BH) or (03) 435 0951 (AH).

KENWOOD TS-670 QUADBANDER: 7, 21, 28, 50 MHz bands. Gen coverage rx. Atm, FM, SSB, CW. In original carton c/w mic, manual. Unmarked, no mods. \$900. Steven VK3TK, Ph: (03) 741 0594 (AH).

SONY 2001 PORTABLE HF/VHF RX: AM/SSB 150 kHz to 29.8 MHz. FM 76 to 128 MHz. Air FM 116 to 128 MHz. Keypad or dial tune. LCD freq readout to 100 Hz. 12/24 hour clock. Scan & time functions. VGC. \$800 ONO. Price includes P&P. Ph: (058) 21 0846 (AH).

FOR SALE — QLD

AOR MODEL AR2001 RECEIVER: 25-550 MHz continuous scanner with Anista 12V DC power supply. Willis extension speaker & "far dinkum" Australian translated instruction manual. Perfect condition. \$550. LA401, QTHR, Ph: Ray (07) 998 2440.

KENWOOD 2600A 2M FM: plus 35W Linear Amp (Daiva), keypad, 10 memories, scan, etc. Included is AC 572 stand, quick charger for base use, DC-DC converter, SMC30 apm/mic, soft carry case. All mint cond. \$500. Ken VK4TR, 8 Reef Court, Marmadale Waters, Qld. 4218. Ph: (078) 52 9090.

KENWOOD R-1060: 100 kHz to 30 MHz General Coverage Receiver. 12V/24V, as new \$480. Yaeasu FL2000 1 kW/HF linear. \$950. Kenwood TX-999 & JR-999 lcv, X-mode, & X-band operation, inc 2m cond. \$850. High performance Daiva RF Speech Clipper/Processor. 12V DC to 240 VAC Converter, 10 watts. \$85. EA 200 MHz Frequency Counter. \$80. Ask for Jali VK4ABJ, Ph: (079) 28 1105.

FOR SALE — SA

FL-2100Z LINEAR AMPLIFIER: Little used, as new. \$800. Murray VK5BJV, QTHR, Ph: (087) 38 0000.

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Seven watts of power is a respectable output for any transceiver. Now imagine the possibilities of that much power packed into a multi-functional handheld.



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Plus you also get plenty of advanced features in the one simple-to-use package.

There are twenty memory channels and one call channel. With programmed scan and memory scan built in. A pocket beep function lets you know if particular subaudible tones are being transmitted.

The top panel digital touchstep switches and readout make frequency entry simple, especially when the unit is belt mounted. And the squelch monitor unit makes squelch control easier too.

After dark operations are no problem because the LCD backlight shows all displays. Then the light turns itself off when you're not using the unit.

In fact, all models have a power saver function built in.

So we don't just give you more power in the palm of your hand. We help you keep it there as well.

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